# The American horologist and jeweler

Vol. 21 March, 1954 No. 3

INCORPORATING HOROLOGY

FOR ADVANCEMENT IN TIMEKEEPING

SCIENCE AND INDUSTRY

genuine

**Hamilton**

*materials cost less*

Only *genuine* Hamilton replacement parts can restore the fine timekeeping qualities built into every Hamilton Watch at the factory. There's no better way to build customer satisfaction . . . and your *profit!*

. . . when you have installed a lifetime, unbreakable Dynavar mainspring . . . the world's finest. Tags are available without charge from your Hamilton materials wholesaler.

Hamilton Watch Company, Lancaster, Pennsylvania

Call on Us
For all your needs in
NAME BRAND WATCHES

# FINE WATCH SPECIALS

**Chronograph**
17J Chrome top/SB
$16.00

**Waterproof**
17J Chrome top/SB
$10.25
In All Steel
$13.00

**Automatic Waterproof**
17J Chrome top/SB
$15.50
In All Steel
$18.50

**Nurses' Waterproof**
17J Chrome top/SB
$13.00
Yellow top/SB
$15.00

*Swiss-Made*
**POCKET ALARM**
Fast selling 7J precision time piece priced for fast turnover.

**$6.50**
We Have Pocket Stop Watches at $7.50

## Henry Sobel & Company
INCORPORATED
145 Canal Street • New York, N. Y.

# The American horologist and jeweler

**Incorporating Horology**

Official National Publication of the United Horological Association of America, Inc., and all its affiliates.

VOLUME 21 | MARCH, 1954 | NO. 3

Owned and Published Monthly by
ROBERTS PUBLISHING COMPANY
P. O. Box 7127—Capitol Hill Station
Denver 6, Colorado



PERSONNEL

ORVILLE R. HAGANS, Editor and Publisher.
GEORGE MARTIN, Managing Editor.
VIRGINIA CLOUGH, Assistant Editor.
WAYNE HULITZKY, Advertising Manager.

Technical Editors
W. H. SAMELIUS, Elgin, Illinois.
J. E. COLEMAN, Nashville, Tennessee.
CARL H. ANDERSON, Lima, Ohio.

Eastern Representative, B. RIEBERG,
66 Beaver Street, New York 4, N. Y.
Canadian Representative, E. J. HESSIN,
21 Dundas Square, Toronto, Ontario, Canada.
English Representative, MALCOLM GARDNER,
12 Earnshaw Street, New Oxford Street,
London, W. C. 2, England.



35 cents per copy—$3.00 per year in the United States, Pan-American countries, i. e., Mexico, Republic of Panama, Colombia, Brazil, Chile, and Ecuador.
Canada—$3.50 per year.
All other countries—$5.00 per year.

New subscribers should state occupational classification on subscription order.

Give both old and new addresses when notifying change of address.

Address all correspondence to the American Horologist & Jeweler, P. O. Box 7127, Capitol Hill Station, Denver 6, Colorado.



Nothing which appears in the American Horologist & Jeweler may be reprinted without special permission. We assume no responsibility for unsolicited manuscripts, photographs, etc. Unsolicited material must be accompanied by a self-addressed, stamped envelope, or return cannot be guaranteed.



(Entered as second-class matter July 19, 1941, at the Postoffice in Denver, Colorado, under the Act of March 3, 1879.)


Copyrighted, 1954, by Orville R. Hagans.


## IN THIS ISSUE


Progressive Steps for Drawing an Escapement ..... 19

Information Please ..... 24
By W. H. Samelius

Watchmakers Contest ..... 34-35

Clockwise and Otherwise ..... 36
By J. E. Coleman

The Watch Repairman and the Oscilloscope ..... 55
By Carl H. Anderson

Jewelry Repairing ..... 78
By R. Allen Hardy

Industry News ..... 82

Advertisers' Index ..... 86

# Help yourself to the limit...

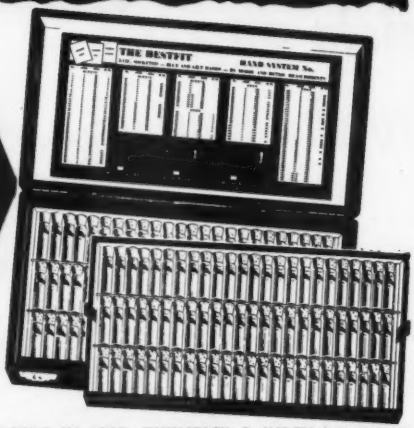
# ...of working ease and speed

**You can't buy a better loupe. Lightweight, almost indestructible, Bausch & Lomb loupes are unexcelled in optical qualities. They outsell all other makes combined. Your jobber can supply you . . . powers 2× to 18× in standard (illustrated), pivot, combination and triple aplanatic models, $1.05 to $12; from your supplier, or write Bausch & Lomb Optical Co., 52027 Bausch Street, Rochester 2, New York**

**BAUSCH & LOMB**
B&L *Loupes*

## Good News for Owners of the Famous Bestfit #6C Hand System

This is your opportunity to convert your #6C into a NEW system which guarantees continuity AND enables you to service the newer models not in the original #6C. The "EXTENSION UNITS" are made up in new cabinets, and with ONLY THOSE HANDS WHICH ARE NOT IN YOUR ORIGINAL #6C ASSORTMENT. You can transfer your #6C hands into this new system for years of continued satisfied service in watch hands — WITH A MINIMUM INVESTMENT.




• ALL SOCKETED-STEEL HANDS • FINEST SELECTION 3 to 13L • 288 HANDS • METRIC GAUGED • BLUE & GILT • INCLUDES HOLE SIZES FOR NEW AUTOMATICS & CALENDARS • HOUR & MINUTE HANDS IN SEPARATE BOTTLE FOR EASIER SELECTION • VALUABLE HAND GAUGE WITH EACH SYSTEM

AVAILABLE IN LEAF, THINSTICK & INDEX PATTERNS

**EXTENSION UNITS** — contains 96 BESTFIT SOCKETED HANDS (Numbers NOT in original #6C) BLUE and GILT in Double Decker Leatherette cabinet with 144 numbered bottles and corks.
#6C3X (Leaf — #6C4X (Thinstick) — #6C5X (Index) ..... $14.15

**COMPLETE SYSTEMS** — contain 288 BLUE and GILT BESTFIT SOCKETED HANDS in double Decker Leatherette Cabinet, with 144 numbered bottles and corks.
#6C3 (Leaf) — #6C4 (Thinstick) — #6C5 (Index) ..... $29.15

NOTE: These BESTFIT HAND SYSTEMS are also available in standard size one drawer steel cabinets.
EXTENSION UNITS—19.15
COMPLETE UNITS—34.15
Specify Steel Cabinet when Ordering

**FREE** with purchase of any Extension Unit or Complete System:

The Famous BESTFIT WATCH HAND INDEX GUIDE #102 and valuable hand gauge. The NEW, COMPLETE BESTFIT WATCH HAND INDEX GUIDE #102 contains 24 pages of up-to-the-minute INTERCHANGEABLE INFORMATION. One Single pair of hands may fit as many as 50 different models. Makes all other hand charts and lists obsolete. Complete listing of hole sizes for more than 1000 popular models including Automatic and Calendars, currently so popular.

**B. JADOW inc.**
860 Broadway
NEW YORK 3

SOLD THROUGH WHOLESALERS ONLY

**IMPORTANT TO ALL WATCHMAKERS!**

EXCLUSIVE

YOUR GUARANTEE OF QUALITY PM

GUARANTEED

# WHITE UNBREAKABLE Mainsprings

**PROVEN—TESTED—ACCEPTED!**

Rust Proof — Not just Rust-Resistant!
Not Steel but the new WHITE ALLOY!
**UNCONDITIONALLY GUARANTEED!**

- **THE ONLY MAINSPRING GUARANTEED NEVER TO BREAK—never to rust or corrode!**
- **THE ONLY MAINSPRING IN THE NEW WHITE ALLOY—not just steel!**
- **THE ONLY MAINSPRING PROVEN, TESTED AND ACCEPTED by leading watchmakers everywhere!**

**WATCHMAKERS!**

**Try This Really Superior White Alloy Mainspring Today for Extra Profits and Complete Customer Satisfaction!**

PM

Write Us for Chart Showing Complete Line of Popular Sizes—And for Name of Nearest Jobber

## P. MEREMINSKY

*Sole Distributors*

**15 MAIDEN LINE • NEW YORK 38, N. Y.**

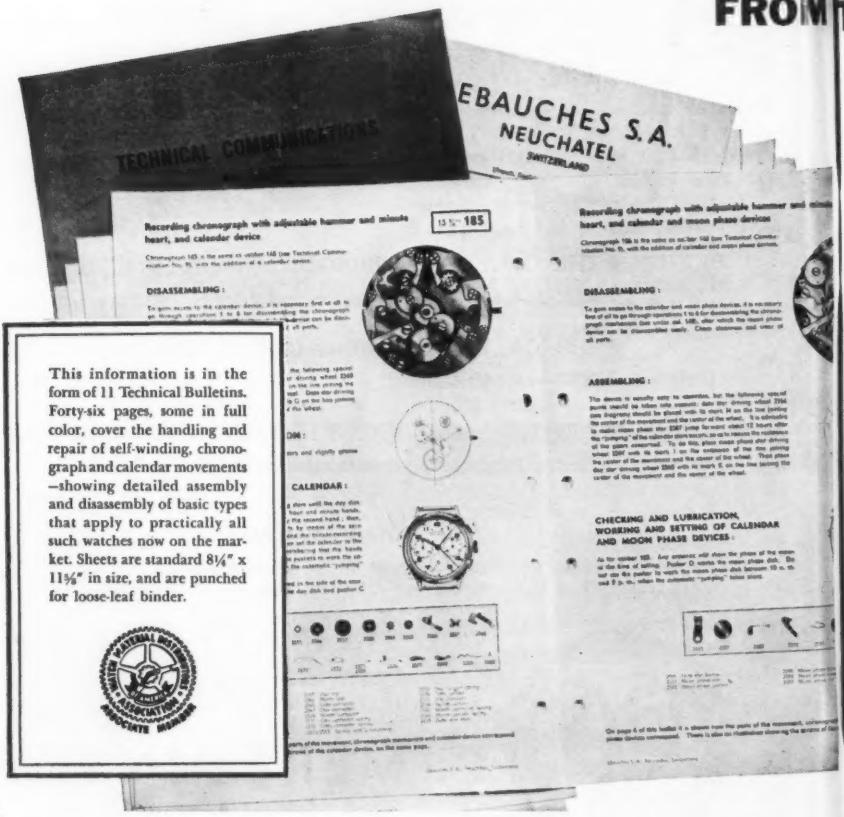
# NOW—to help you service ch

## new, free

# TECHNICAL E

## and ca

## FROM TI


TECHNICAL COMMUNICATIONS
EBAUCHES S.A.
NEUCHATEL
SWITZERLAND
Recording chronograph with adjustable hammer and minute heart, and calendar device
13 ½ - 185
DISASSEMBLING :
ASSEMBLING :
CALENDAR :
CHECKING AND LUBRICATION, WORKING AND SETTING OF CALENDAR AND MOON PHASE DEVICES :

This information is in the form of 11 Technical Bulletins. Forty-six pages, some in full color, cover the handling and repair of self-winding, chronograph and calendar movements —showing detailed assembly and disassembly of basic types that apply to practically all such watches now on the market. Sheets are standard 8¼" x 11⅛" in size, and are punched for loose-leaf binder.

# chronographs, self-winding watches calendar watches—

# BULLETINS

## THE WATCHMAKERS OF SWITZERLAND

FROM SWITZERLAND come 11 different detailed and up-to-the-minute bulletins—required reading for everyone who services or repairs chronographs, self-winding movements or calendar movements.

Our recent trial introduction of the first six of these bulletins was so successful that it was decided to expand the set to eleven, and make them available in a handy folder—free of charge. They tell, in words and keyed diagrams, the correct procedure for disassembling, assembling and casing these movements.

Like the Official Catalogue of Swiss Watch Repair Parts, its supplements and other publications, these bulletins are a service to the Watchmakers of America . . . from *The Watchmakers of Switzerland.*

## HOW TO GET YOUR SET

### of these new Technical Bulletins:

**Your watch materials distributor has an order card for you.**
**Ask him for it . . . fill it out and mail it in.**
**Supply is limited, so mail just <u>one</u> card, please.**

*The* WATCHMAKERS OF SWITZERLAND

*Now you can tell your Customers*

**"Watchbands...jewelry look like new after our repairs."**

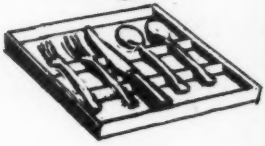
*Yes, you can add to your prestige and get* **BETTER PRICES** *when you do your own electroplating with the*

# New JNT APPL-I-COTER

**Electroplate with silver, gold, copper, met-l-cote, and the newest precious metal — rhodium! You can retouch worn spots or completely plate small items with this amazing new invention! It's easy: just touch metal disc to article to be placed, dip brush in solution and brush on plating. Operates on two penlite batteries. Each kit complete with brush and solutions.**

**No. 35-712—SILVER GOLD Combination,** for plating watch bands, bracelets, jewelry, silverware, loving cups and rings. **Complete $7.95**

**No. 35-713—RHODIUM-COPPER Combination,** for jewelry, lighters, etc. with rhodium, more precious than platinum — beautiful as silver . . . but does not tarnish. Copper is used as a base plate for certain metals. **Complete $9.95**



No. 35-714—GOLD-COTE kit plates with 24 kt yellow gold; for worn jewelry, watchbands, compacts, etc. **Complete $6.15**

No. 35-715—SILV-R-COTE kit plates worn areas of silverware with pure silver. **Complete $3.95**

No. 35-716—MET-L-COTE kit plates lighters, etc. with a non-corroding metal alloy similar in appearance to chrome and nickel. **Complete $3.95**

No. 35-717—COPR-LECTRO-COTE kit plates worn areas of copperware with copper. **Complete $3.95**

No. 35-718—RHODIUM-COTE kit for plating jewelry, lighters, compacts, etc. with rhodium. **Complete $7.95**

***ORDER FROM YOUR DEALER***

HAMMEL, RIGLANDER & CO., INC., NEW YORK 16, N. Y.

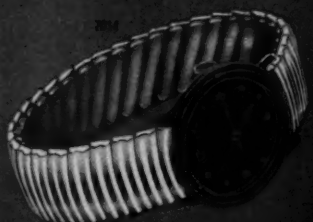
stellar styling in a
brand new version of the
JB Golden Wisp
The dress-up design destined for rocketing popularity...a new, streamlined style in the famous "Golden Wisp" series of "telescope" expansions. Retail F.T.I. $7.5
6097—Yellow, Pink or White‡
Other Wisp designs (right).. Retail F.T.I. $7.
6085—Yellow or White‡
6075—Yellow, Pink or White‡
6094—Yellow or White‡
‡1/15-12K gold-filled
JB WATCH BAN
More style
J-B is first again with trend-settingstylesfor'54! Again...a demonstration of style leadership recognized by fashion experts and customers alike.
JB
More gold
33⅓ to 60% heavier lay of karat gold* than in t majority of leading ban sold at competitive or much higher prices!
*1/15-12K gold-filled top shells, stainless steel backs.

# New upper strata styling especially for round watches

"Round the country—round watches are tremendous vogue! J-B—first with bands for these favored watches—now styled a brilliant new series for popular "round."

Champion Shilling (8016)—Stainless Steel.....Retail $8.95
Golden Shilling (7016)—Yellow Gold-Filled*
Retail F.T.I. $10.95
Wellington (7014)—Yellow Gold-Filled*....Retail F.T.I. $8.95

*1/50-12K gold filled top shells, stainless steel backs.



J-B bands are sold only through authorized wholesalers

## gold

0% heavier layer gold* than in the y of leading bands ompetitive or gher prices!

gold-filled top shells, eel backs.

## More wear

The heavier top shell of gold on a base of pure nickel makes J-B bands wear longer than other bands by an amazing margin — according to a nationally famous testing company.

## More profit

J-B superiority brings customers back for more ...helps maintain the jeweler's fine reputation. Every J-B band is fully guaranteed. You enjoy full profit protection.

Litho. in U.S.A.

# Bright new stars

## New meteoric styling for ladies' straight-end watches

In tune with the demand for new wider bands with straight ends. Perfect with fast selling sport watches and straight-end round watches. Crafted with J-B genius for deluxe detail.

**Golden Triumph** (2025)—Yellow Gold-Filled*..... Retail F.T.I. **$9.50**
**8061**—Same as 2025 in Stainless Steel..... Retail **$5.50**
**Lindella** (2023)—Yellow or White Gold-Filled*..... Retail F.T.I. **$9.50**

*1/15-12K gold-filled top shells, stainless steel backs.

JB

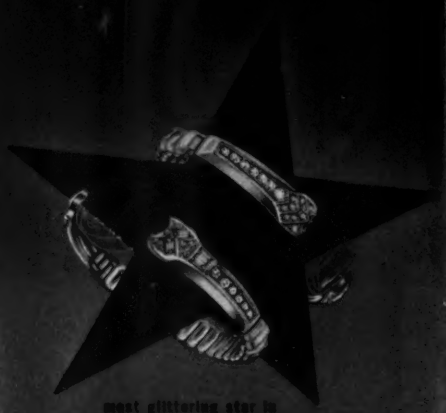
styling

vatches

ight
-end
etail.

# Never before seen

outshining all others
in Styling, Quality, Value



## Royal Lancer

Polished golden escutcheons add distinction to the Royal Lancer! Under the heavier layer of karat gold, *pure nickel*, best base for long life and corrosion-resistance.

7017—Yellow Gold-Filled*.....Retail F.T.I. $9.50

*1/15-12K gold-filled top shells, stainless steel backs.

most glittering star in the fashion firmament!

## "Diamond Lady"

Glorifying the feminine hand ...the golden circlet accented with a blaze of rhinestones. A precious look at a little price!

Diamond Lady (6046)—Yellow or White Gold-Filled*.....Retail F.T.I. $8.95

6047—With hand set baguette rhinestones Retail F.T.I. $10.95

FREE!

"Diamond Lady" Display

You pay only the cost of the bands themselves!

Your cost.....$12.75

Your selling price...$30.00!

(Federal Tax Included)

"the only watch band ever selected for fashion's highest award"*

# incabloc

## will work for you . . . sell for YOU!

*It's like having another salesman behind your watch counter!*

**Never before in the history of watchmaking has a component of a watch done so much as INCABLOC Shock Absorbers to create and close watch sales. Only INCABLOC-equipped watches give you these strong selling points:**

- **INCABLOC protects the vital parts of a watch against damage from everyday shocks.**
- **INCABLOC maintains the accuracy of a watch.**
- **INCABLOC extends the life of a watch.**
- **INCABLOC is now used in over 75,000,000 watches—proof that watch manufacturers and customers recognize the importance of INCABLOC in watches.**

**And just as important, INCABLOC protects *you* because—it reduces unprofitable returns and servicing to a minimum during the guarantee period of the watch—keeps your customers satisfied. Tie in with INCABLOC's powerful national advertising in LIFE, SATURDAY EVENING POST, WOMAN'S HOME COMPANION. Use INCABLOC free selling aids—colorful six-page booklets, counter cards, mats, watch tags.**

**Remember, when you feature INCABLOC, you *sell more watches.* It's like having another salesman behind your watch counter.**

***For the attention of watchmakers and repairmen: When routine cleaning or repairs are required, INCABLOC permits easy cleaning of balance-pivots and oiling of jewels without disassembling the watch movement or affecting the adjustment.***

**"Any watch is a better watch with INCABLOC"**

# incabloc

*Made In Switzerland*

INCABLOC CORPORATION, 15 West 46th Street, New York 36, N. Y.

# WHY AND HOW SEITZ REAMERS ARE USED

Start with the smallest reamer. Each successive size reamer is used without exception until the desired diameter is reached.

The smooth cylindrical part (directly above the cutting edge) of the last reamer required, is used as a burnisher.

The reamers are designed to be used with a light pressure due to the half round shape which permits rapid and flawless cutting.

Genuine Seitz jewels are the natural complement to the fine precision work done by the Seitz reamer.

***Ask Your Supplier for the Seitz Friction Jewelling Tool and the Genuine Seitz Jewels for Repairs***

**Sole agents for all countries BERGEON & CIE. LE LOCLE (Switzerland)**
**Wholesale Distributors**

## *"If Eventually—Why Not Now"*

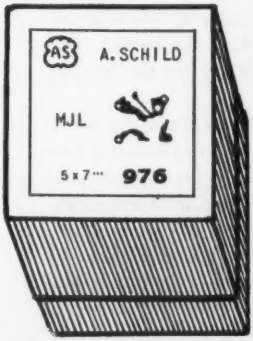
# EBAUCHES GENUINE MATERIAL

**Order Your System For The Packaged Parts**

# SAVE TIME AND MONEY

**with OFFICIAL EBAUCHES ASSORTMENTS**

- **Genuine EBAUCHES Material Assortments**
- **In 1- or 2- Drawer Stack-up Official Steel Cabinets**
- **Staffs and Stems in Genuine EBAUCHES Containers**
- **Parts Arranged in Material Boxes (Shown Below)**
- **Plenty of Room for the Watchmaker to carry complete lines of All Models**




### OFFICIAL EBAUCHES ASSORTMENTS

**No. 40**—Ebauches Material Assortment.....**$19.75**
Contains 63 models of Genuine Packaged Staffs and Stems. In 1-Drawer Metal Cabinet.

**No. 45**—Ebauches Material Assortment.....**$72.50**
Contains 63 models of Genuine Packaged Staffs and Stems plus 63 (*7-piece) units of Setting and Winding Parts. In 1-Drawer Metal Cabinet.

**No. 50**—Ebauches Material Assortment.....**$37.75**
Contains 114 models of Genuine Packaged Staffs and Stem. In 2-Drawer Metal Cabinet.

**No. 55**—Ebauches Material Assortment.....**$134.50**
Contains 114 models of Genuine Packaged Staffs and Stems plus 114 (*7-piece) units of Setting and Winding Parts. In 2-Drawer Metal Cabinet.

Handy reference chart with exact size and shape drawing of each caliber enclosed in every assortment.

*7-Piece unit consists of Set Bridge, Winding Pinion, Set Lever, Clutch, Set Lever Screw Click Spring, Clutch Lever Spring.

These assortments were made with the cooperation of the Watchmakers of Switzerland.

**The great advantage of ordering Ebauches Assortments is that you may order refills from any supply house and you will be assured of receiving GENUINE expertly inspected parts. Some ads state "Genuine Swiss" which merely means "Made in Switzerland" but "GENUINE EBAUCHES" means GENUINE FACTORY PARTS.**

# M. J. LAMPERT & SONS, INC.

***Exclusive Wholesale Distributors***

352 FOURTH AVE. NEW YORK 10, N. Y.

# A Point for Poindexter

Once there was a slightly dubious Bloodhound named Poindexter Battlestations O'Toole, known as B O to his friends who disliked the name of Poindexter.

Poindexter devoted the summer months to watching butterflies, and the winter, when there weren't any butterflies, to sleeping, except for an occasional stretch to wolf down a platter of dog biscuit provided by the management.

His mother, Bertha Bigfoot O'Toole (nee McGillicuddy), always felt that he should spend his time watching something more active than butterflies, but since somebody kept slipping Poindexter enough dog biscuit to keep him happy, he naturally paid no attention to her.

It is not for us to say that Poindexter's life was not an ideal one for Poindexter. However, being in the Material Business, the fact remains that no one will supply us with dog biscuit (or its commercial equivalent), for following in Poindexter's footsteps. Fortunately we don't envy Poindexter. The very real kick we get out of this business lies in trying very hard to give our friends and customers the type of service that will make us more friends and customers. Winter and Summer we like to think that we are alert enough to be possibly a little better than the best of our competition. Naturally we'd like to have you for a customer.

*Have you the "Illustrated Manual of American Watch Movements" with 1953 supplement? Free with any $5 order.*

*Write for recent catalogues.*

**THE E. & J. SWIGART CO.**

JEWELERS and WATCHMAKERS Materials and Supplies

34 WEST SIXTH ST **Cincinnati 2, Ohio** ESTABLISHED 1879

*The American* **horologist** *and* **jeweler** **Incorporating Horology**

**Volume 21** **March, 1954** **No. 3**

# Progressive Steps for Drawing an Escapement

**By W. H. Samelius**

*(See sketch Page 20)*

1—Locate horizontal line near lower edge of paper.

2—From center of horizontal line, erect a perpendicular line *1*.

3—From point *O*, scribe a semi-circle of five-inch radius. This will be the primitive diameter for the escape wheel. Figure *2*.

4—Locate position for pallets and as there are fifteen teeth in the escape wheel, the space between each tooth equals 24 degrees. The pallets are so placed to spread over two and one-half spaces, consequently 2½x24 degrees equals 60 degrees for the angles to which the pallets are placed. Then lay off 30-degree angles to the right and left of the center or perpendicular line. See lines *3* and *4*.

5—From where the escape angles cross circle, erect perpendicular lines tangent to the circle and crossing the center line. Where these tangent lines intersect the center line will determine location for pallet center *A* and *B*.

6—Being circular pallets and five degrees wide, mark off 2½ degrees on both sides of the escape angle. See lines *5*, *6*, *7* and *8*.

7—From intersection of line *5* and circle *2* mark off to the left 5½ degrees for width of tooth and scribe radial line *9*.

8—From intersection of line *8* at circle *2* lay off to the right 1½ degrees for drop. See line *10*.

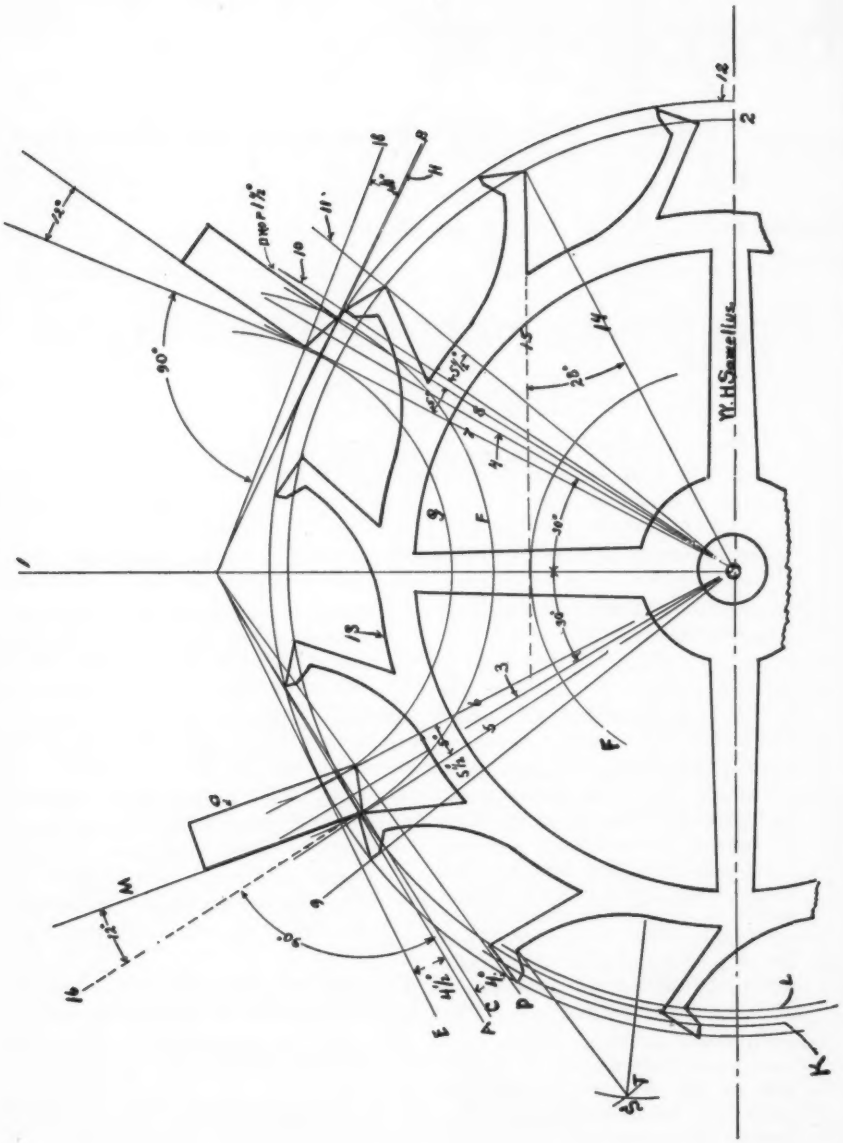
9—From where line *10* crosses circle *2*, mark off to the right 5½ degrees for width of tooth. See line *11*.

10—From pallet center draw a line 1½ degrees below the tangent line *A*. This determines the amount of drop lock, line *C*.

11—Below the lock line *C* draw the lift line for pallet of four degrees, line *D*.

12—Above the tangent line *A*, draw line *E* 4½ degrees for lift on tooth.

13—From the center of the escape wheel, span the compass to intersection of line *6* and line *A* and scribe an arc *G*. From pallet center to intersection of line *5*, strike arc *F*. This determines the full width of pallet.


W. H. Sawellus.
90°
30°
28°
45°
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
K
L
M
N
O
P

14—From pallet center, span the compass to intersection of line *6* and circle *2* and strike arc *G*. This determines full width and path of pallet stones.

15—Draw face of receiving pallet with a line running from the intersection of circle *G* and line *6* to intersection of line *5* and *C*.

16—To find full diameter of wheel, strike a circle by spanning the compass from center of escape wheel to intersection of line *6* and line *E*. See circle *12*.

17—Between lines *10* and *11* and *5* and *9*, fill in face of tooth between primitive diameter, circle *2* and full diameter, circle *12*.

18—Now that the two teeth are located, mark off 24 degrees for spacing on primitive diameter of circle *2*, locating rest of the teeth from toe to toe.

19—Having the length of the face of tooth with the dividers, mark off the length for the balance of teeth, spanning the compass from toe of the tooth to heel of the tooth between circles *2* and *12*. (In other words, between the primitive and full diameters.)

20—Usually the length of the tooth equals the one-half of circular pitch or distance from toe to toe on primitive diameter. With the dividers, find one-half of the pitch and set that distance off from the primitive circle *2* into the wheel on the center line, then scribe circle or root diameter. See *13*.

21—From the toe of any tooth, scribe a radial line to the center of escape wheel. See line *14*.

22—From the toe of the tooth erect an angle of 28 degrees. See line *15*.

23—From the center of the escape wheel scribe circle *F* tangent to line *15*.

24—By placing straight edge at the toe of each tooth and tangent to circle *F*, complete the front of the tooth from circle *2* to circle *13*.

25—To complete the form of the tooth, scribe a circle *K* midway between circles *12* and *2*.

26—Then scribe a circle of same spacing inside of circle *2*. See *L*.

27—Fill in the short radial line from heel of tooth between circles *12* and *K*. For thickness of neck of tooth, take one-half the length of face of tooth and mark that distance on circle *L*.

28—From circle *K* and to the point for neck of tooth on circle *L*, connect with a line.

29—Find one-half the distance from tooth to tooth on root diameter and point off that amount to the left of tooth.

30—Span the compass from toe to toe and with that setting, place compass on designated point on root diameter and strike an arc line *6*. Then from the inside neck of tooth, place compass and strike an arc *T* intersecting arc *S*. Set the point of your compass on this intersection and complete the back of the tooth from the root diameter of the wheel to neck of tooth on circle *L*.

32—From line *C* erect a perpendicular line from the receiving corner of the receiving pallet. Line *16*.

33—From the corner of the pallet stone, lay off an angle of 12 degrees to the right of the perpendicular line. This is known as the draft angle. See line *M*.

34—Then complete the pallet by drawing a parallel line *O* to line *M*. The length of the pallet stone may be four times its width.

35—From the pallet center draw a line tangent to line 8. See line *H*.

36—From pallet center draw a line four degrees above line *H*. See line *18*.

37—From the point of intersection of lines *7* and *18* and between line *8* and arcs *F* and *G* fill in face of pallet between intersecting arcs of *F* and *G*. Then complete pallet with parallel line from point *H*, then cut stone to length, same as receiving stone.

38—Ordinarily the width for rim of wheel equals 1/5th the distance from toe to toe set into the wheel measured from the root diameter. The diameter for center of wheel may be 1/5th of its full diameter. The wheel has four spokes and the width of the spoke at the rim is equal to the width of the rim, increasing ⅓ toward center.

PRE-PUBLICATION SALE

# "BENCH PRACTICES FOR

■ *A Sequel to Fried's "The Watch Repairer's Manual"*

- Covers Specialized Phases of Watch Repairing
- Practical for All Watchmakers
- Beautifully Illustrated
- Off the Presses in April
- A Bargain Offer
- Only **$4.95**

**CLIP AND SEND THIS ORDER FORM NOW!**

**AMERICAN HOROLOGIST & JEWELER**

BOOK DEPARTMENT

**Capitol Hill Station P. O. BOX 7127 Denver 6, Colorado**

# OF HENRY B. FRIED'S
# "WATCH REPAIRERS"

"Bench Practices for Watch Repairers" is a successor to the author's celebrated first book, "The Watch Repairer's Manual," and was written to meet the demand for additional information on more specialized operations in watch repairing. Profusely illustrated, this impressive technical manual covers Complete Hairspring Practices, Replacing Regulator Pins, Watch Screws and How to Make Them, Uses of Staking Set Stumps, Complete Treatise on Jeweling, Replacing a Barrel Hook, Repivoting, and Dial Repairs.

Publication of "Bench Practices for Watch Repairers" is scheduled for completion in April, 1954. There will be a great demand for this book. Order your copy now to insure immediate delivery upon publication date. Only $4.95 per copy, postage prepaid during pre-publication offer.

**AMERICAN HOROLOGIST & JEWELER**
**P. O. Box 7127, Capitol Hill Station**
**Denver 6, Colorado**

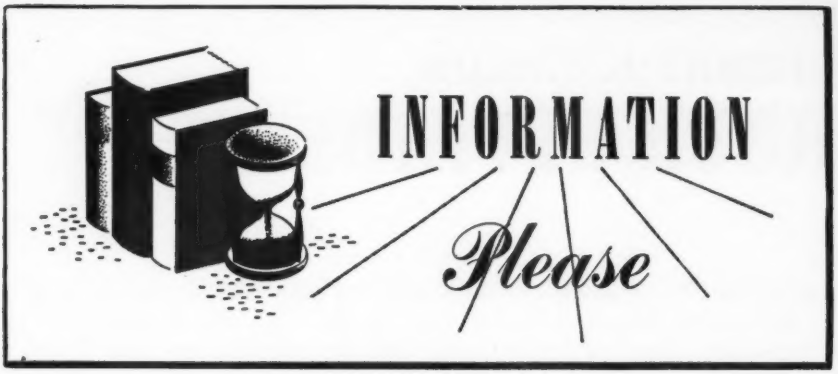
**Postage Prepaid During Pre-Publication Sale**

Please enter my order for_____copies of "Bench Practices for Watch Repairers," by Henry B. Fried, at $4.95 per copy. I understand that I will receive my order immediately after publication in April, 1954.

NAME_____

ADDRESS_____

CITY AND ZONE_____ STATE_____




**LCS: The shop I am working in, I am more or less troubled keeping track of my bench tools. My fellow workmen borrow them and forget to return them, and sometimes it is hard for me to prove I am the rightful owner. Is there any easy way to mark these tools? I have tried to use a punch, but I find some tools are too hard to make an impression.**

Answer: To mark your tools, cover the space to be marked by first warming the tools slightly or just enough to flow a coating of tallow or beeswax over the surface. When cool, use a sharp instrument inscribing your initial or name through the tallow. Fill the lettering with nitric acid, letting it remain for five or ten minutes. Dip the tool in water to wash off the acid; then the wax or tallow is easily removed with naphtha. You will then find your name etched in the surface.

**JLP: I have a lot of old files that have laid around the shop for years. I am told they can be resharpened and restored to working condition. New files are expensive and if the old ones can be reconditioned without very much expense, I will appreciate your help.**

Answer: From a formula that comes well recommended, you should be well repaid for your time and small expense. First clean the files with a steel scratch brush. Then with naphtha, clean the files thoroughly. Place them in a bath of the following solution: 1 part sulphuric acid, 5 parts water. Let them remain in the solution for three or four days, or until the edges of the file are fully restored. Wash thoroughly in water to remove the acid. The writer does not claim that the file will cut like new, but it can do a satisfactory job.

**HT: I recently took in a piece of jewelry that had accidently come in contact with mercury; the article is covered white. I did my best to remove the mercury by buffing or filing. It took a long time and I wasn't very proud of the finished job. In case I get another job of this type, is there any other way to remove the mercury?**

Answer: To remove mercury from gold articles, heat the article gradually over an alcohol lamp (avoid breathing the fumes), the article will clear up, and then it can be buffed with rouge and a soft buff.

**JGS: Will you give some suggestions on how to put a 400-day clock in beat?**

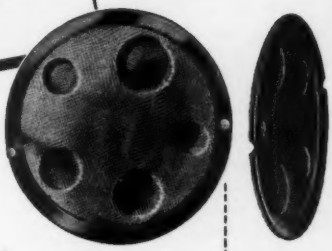
Answer: Observe the lever and escape wheel through the peep-holes in the back plate. When the pallet leaves the tooth of the escape wheel, the pendulum must rotate a slight amount farther, the pendulum will then rotate to the opposite side, and after the tooth has dropped on the pallet, the pendulum should continue to rotate the same amount as occurred previously.

INFORMATION PLEASE

Directed by
W. H. SAMELIUS

Chairman, Science of Horology and Technical Advisory Board

New!



For Smallest Movements

L&R craftsmen have designed this new basket unit to meet the most exacting requirements for the cleaning of the modern, small movements. Made of 50 x 50 monel mesh, this special purpose basket accommodates the balance, pallet and screws of such movements as the 5-ligne, 6 x 8's and baguettes. It is used with the #1 basket of the L&R Junior, Special, Master, Mastermatic and Automatic Watch Cleaning Machines. To use: simply remove the present "B" and "C" baskets and replace them with the NEW small parts unit.

Price
**$4.00**
per set

**The L&R Aligned Small Parts Unit**

**PRECISION ALIGNMENT**

**. . . assures parts remaining stationary in the basket**

**. . . prevents bending or breaking of pivots which might otherwise occur when small parts turn over in larger baskets**

**. . . eliminates loss of smaller screws**

WATCHWORD OF THE WATCHMAKER
L&R
Main Offices and Plant
577 Elm St., Arlington, N. J.

If the distances the pendulum travels is unequal at both ends of the rotation, the clock is out of beat. To put the clock in beat, the method is as follows: On the back of the plate is a bridge into which a pillar is attached, held by a screw. The suspension wire is held in place by a small bracket centered within the pillar. Screwed onto the suspension wire at a slightly lower point is the fork which guides the lever. Loosen the screw which holds the pillar, and turn the pillar slightly with the help of protruding arm to which the wire is attached. By turning the protruding arm it changes the amount of slide or continuation of run after the escape wheel has drop locked. Then to put the clock in beat, it is merely a matter to turn this pillar by means of the small lever until the run, or slide, is equal on both sides of the pallet, then tighten the screw holding the pillar when you should have no further trouble.

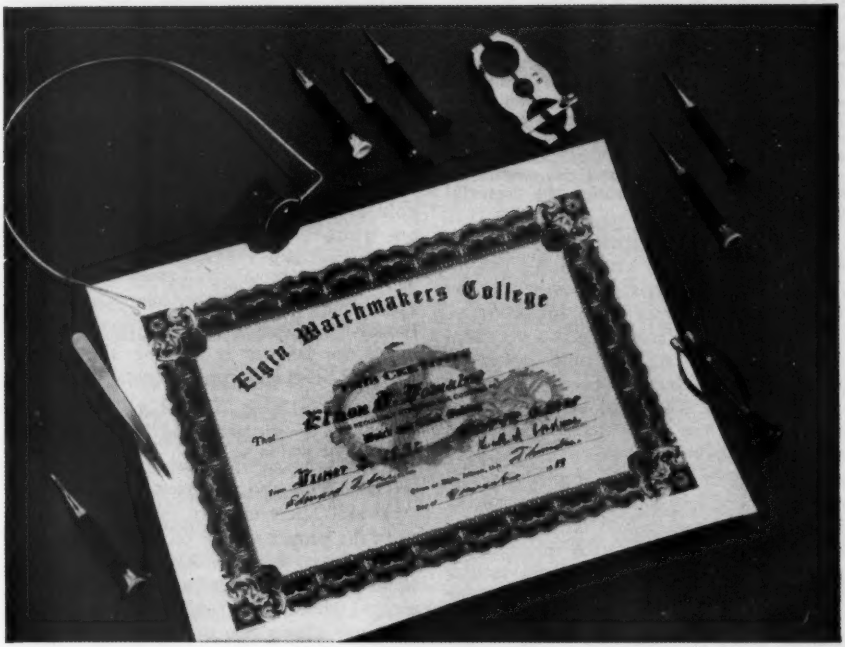
**EEG: Do you recommend placing oil on the detent screw where it passes through the plate to help in loosening the screw allowing the stem to come out? A Mr. X said at a recent meeting not to remove unbreakable mainsprings when cleaning a watch. What do you think of this? On some small watches, I find the pallet arbor out of upright. I push on the stationary pin next to the screw that holds the pallet bridge in place, then I can shift the bridge enough to upright the arbor, then I tighten the screw to hold the bridge in place.**

Answer: It is recommended placing oil on the detent shoulder that passes through the plate. While there is very little motion on that bearing, oil will help a free action. However, this will not prevent detent from coming loose. In a case where the detent works loose from the screw, you will generally find that the shoulder on which the detent rests does not come all the way through the plate. See answer to RST in this column. Regardless of what Mr. X says about not removing the unbreakable mainspring, we might assume that the spring is not set, it will still require cleaning and re-oiling the same as any carbon steel mainspring. It should be treated to a thorough cleaning and re-lubricating the same as any other part of the watch. Your method of uprighting the pallet arbor is permissible, and often necessary as the holes in the lower plate may be a trifle large for the steady pins, and by applying pressure against the bridge will shift it to the proper position so your arbor will be upright.

**WU: Some time ago I took in a gentleman's wrist watch to regulate it, and it had only recently been cleaned. I regulated it to within 15 seconds in five days running, but when worn, it gained about 2½ minutes per day. It was checked carefully, but I could not find anything wrong. The balance took about 1¼ turns, everything seemed free—jewels, pinions, etc. What would you suggest?**

Answer: You say you checked the watch carefully and did not find anything wrong? However, it might be possible that the hairspring might be laying too close to the balance or up too high very close to the regulator pins. As you say, you regulated the watch in your shop, and it kept good time. It could be possible that when the watch is carried, constant jars might cause the hairspring to rub on the balance or strike the regulator pins, which naturally would cause a gaining rate. Then again it might be that the watch is taking too much motion and when carried, the jars and vibrations will cause the balance to overbank, which would again cause a gaining rate. Magnetism might have something to do with it. Side shakes in the balance pivots might interfere with the free action of the escapement when carried, but not when the watch is laying down or hanging up. Over-motion might also cause the hairspring to expand excessively allowing some of the coils to contact one another which might also be a cause for gaining time, or a loose roller jewel that might shift causing trouble when the watch is being carried.

**JHM: I recently purchased a pivot polisher where the pivot just protrudes through the hole in the thin steel plate and is turned by a pulley which is driven by the lathe. I already had balance balloon chucks which seemed to be just as good. After reducing the size of the balance pivot, I like to have a good polish on it, but cannot get the necessary pressure on the pivot to produce the desired results. I have read a lot about the Jacot pivot lathes, but they are not listed in any of the new catalogs of watchmaker's tools. Have they stopped making them? It**




# His finest equipment comes from Elgin Watchmakers College

**It's his diploma.**

Why? Because he has learned his craft as only the most experienced faculty in the land could teach him.

The man who has studied at America's leading school is *always* in demand. And what is more, watchmaking is a fascinating as well as lucrative career.

The down-to-earth practical courses include watch, clock, and jewelry repairing, engraving, watch selling and jewelry store management. It is approved for veterans under the G.I. Bill of Rights. For our free bulletin, mail the coupon today.

ELGIN

WATCHMAKERS COLLEGE

**ELGIN WATCHMAKERS COLLEGE, Box 20**
**267 S. Grove Avenue, Elgin, Illinois**

Gentlemen:
Kindly send me full information about your courses in watchmaking.

Name _____ *(Please print name and address)*

Address _____

City _____ Zone _____ State _____

**seems to me a Jacot tool would allow enough pressure to get a nice mirror polish needed for balance pivots. It may be my polishers or burnishers are not what I should use. Also, will you give information on polishing powder, how to mix and what to use for burnishers. Are there ready-mixed pivot polishing compounds on the market available through the material houses?**

Answer: M. J. Lampert & Sons, 352 Fourth Avenue, New York, N. Y., can inform you what material houses handle the Jacot lathe, as Lampert are importers of these lathes. The Jacot lathe is a very useful tool, and in fact, the only tool made allowing one to burnish pivots by means of a burnisher. The Jacot lathe is so constructed that the pivot to be burnished rests in a V-slot where there is no danger of breaking a pivot. When polishing pivots in the ordinary lathe, a steel burnisher is of very little help and only useful for burnishing the end of the pivot. The pivot itself is first ground down to size with an iron slip charged with very fine oilstone powder and oil mixed to a consistency of putty and used very sparingly, just enough powder to grind, but not so much as to cover pivot. For polishing, you may use a tin slip or bell metal slip charged with diamontine that has been mixed with watch oil to a consistency of paste. This should also be used very sparingly. The final glossing may be done with a boxwood slip and diamontine. Some watchmakers prefer to use rouge in place of diamontine which gives a blacker surface finish similar to the finish you find in English watches.

**JRP: I would like information on a key wind watch. It has Roman numerals and named New York Watch Co., Springfield, Massachusetts, serial number 23114, and signature "John Hancock."**

Answer: The New York Watch Company was organized at Springfield, Massachusetts in 1864. After two failures, it was merged in 1877 with the Hampden Watch Company. An advertisement in The American Horologist & Jeweler may find a purchaser, as this appears to be a collector's item.

**PHK: Will you give a formula for gold-colored varnish or lacquer that can be used on clock ornaments that have become black? The ornaments are made of brass.**

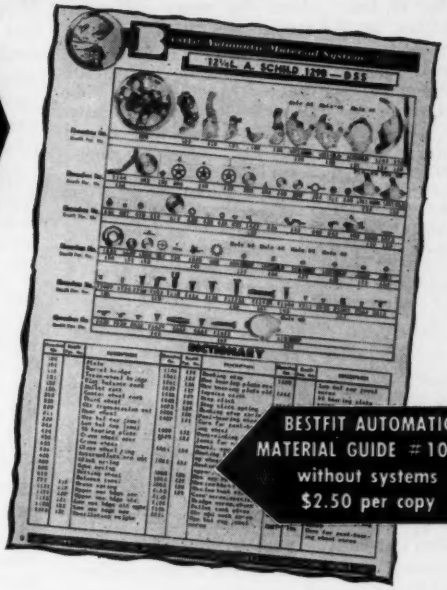
Answer: The ornaments must first be cleaned by buffing or dipping in a solution of potash (made quite strong). When the lacquer is removed, the article must be washed and dried, then re-polished before lacquering. The article should be slightly warm before applying lacquer. To make up gold-colored varnish or lacquer, pulverize one gram of saffron and one-half gram of dragon's blood, and put in one pint of spirits of wine. Add two ounces of gum shellac and two drams of soccotrine aloes. Dissolve the whole by gentle heat, and when the lacquer is applied, the highly polished brass will appear almost like gold.

**ALS: What is the accepted method for oiling the escapement and how long will a bottle of watch oil last? I am told to oil the roller jewel to increase the balance motion. What are your views?**

Answer: There is more than one opinion as to the proper way to oil the escapement. Your writer, when oiling the escapement, holds the tip of the oiler close to the escape wheel teeth, and as the watch is running, allows two or three teeth of the escape wheel to pick up a small amount of oil, then allows two or three teeth to pass without any oil, then follows up by oiling the next two or three teeth. In this way, the oil will be fairly well distributed and proves to work very satisfactorily. A bottle of oil will last for many months, however. Of all items used in watch repairing, the cost of oiling per unit of watch is very small. Many watchmakers procure a fresh bottle of oil each month; the thought and reason is that if a bottle of oil turns out to be bad, they would not have so many comebacks. The comebacks would be limited to the one month that a certain bottle of oil was used. It is a good practice to keep the oil in a dark place—some oils deteriorate when exposed to sun and daylight. It is not good practice to oil the roller jewel. What slight friction occurs at this point when the roller jewel passes through the fork slot is not detrimental for timekeeping. If the fork slot is rough or shows grooves, it is better to refinish the fork slot and replace with a larger roller jewel. If the roller jewel is oiled, the oil will, in a short time, become gummy and offset anything gained by oiling the

# Bestfit Automatic Material Guide #103

Complete informative reference book of 80 pages illustrating over 100 original and different automatic self-winding movements in actual size, and covering all automatics, with practically no exceptions, including Domestic, Swiss, French and German.



BESTFIT AUTOMATIC MATERIAL GUIDE #103 without systems $2.50 per copy

**Every automatic part illustrated in the BESTFIT GUIDE #103 is described by Genuine Factory part name and number. The systems are designed for unlimited expansion.**

**Refills and additional material are always available from your regular wholesaler.**

## Ask your supplier to reserve your copy today, or obtain your copy FREE WITH ONE OF THE FOLLOWING NEW BESTFIT SYSTEMS:

**BESTFIT AUTOMATIC MATERIAL SYSTEM =X255..**

**25 different pieces of the most popular automatic repair parts individually packaged in numbered envelopes, plus 144 printed, un-numbered envelopes . . . in a sturdy, hinged pasteboard cabinet, and including the BESTFIT AUTOMATIC MATERIAL GUIDE #103..... $10.35**

**BESTFIT AUTOMATIC MATERIAL SYSTEM =255 . .**

**Exactly the same as above, in a one-drawer steel cabinet, and including BESTFIT AUTOMATIC MATERIAL GUIDE #103..... $19.00**

**B. JADOW, *inc.*** 860 Broadway at 17th Street ● SOLD THROUGH WHOLESALERS ONLY

roller jewel. Better leave the roller jewel dry.

**JEG: I am a young watchmaker and have a lot to learn about the many different watches on the market today. One thing strikes me as queer. Why don't the manufacturers use standard threads for all their models so that we could use a standard screw for any model watch, especially the American watches. I see so many watches that are simply ruined by workmen who tried to substitute an odd screw, forcing it into the plate, and more often than not, stripping the threads entirely. A standard thread and diameter for screws would be desirable and a great help, besides we would not have to carry such a large assortment of screws for our American watches.**

Answer: Your question is not a new one, and your suggestion is much to be desired. There has been some consideration among the watch factories that some system or standard of screws be adopted. One of our American watch factories has adopted a standard of diameters and pitches to correspond with the Swiss Horological Industry Standard published in 1923. In the form currently under consideration, the proposed standard consists of the following diameters and pitches:

| Basic Outside Diameters (mm) | Pitch (mm) |
|---|---|
| 0.30 | .080 |
| 0.35 | .090 |
| 0.40 | .100 |
| 0.45 | .100 |
| 0.50 | .125 |
| 0.55 | .125 |
| 0.60 | .150 |
| 0.70 | .175 |
| 0.80 | .200 |
| 0.90 | .225 |
| 1.00 | .250 |
| 1.10 | .250 |
| 1.20 | .250 |
| 1.40 | .300 |

**GES: When and who invented the dead-beat escapement as we find it today in our modern clocks? When and who invented the escapement as we have them today in the modern watch?**

Answer: The dead-beat escapement was invented by George Graham of England in 1730. It was an improvement on Dr. Hooke's anchor or recoil escapement. The dead-beat escapement has proven itself very satisfactory and is employed for regulator and astronomical clocks. The lever escapement was invented by Thomas Mudge of England in 1765. However, this was a ratchet tooth escapement with double roller. Years later, the Swiss improved on the English escapement as we have it today. Thomas Mudge presented one of his watches, a masterpiece, to Queen Charlotte of England.

**GMS: In this locality where I am, we receive a lot of Indian-made jewelry for repairs, and quite often get some filigree jewelry that has turned black, and we do not have any results buffing or brushing or using silver polish. How can it be restored to its original white finish?**

Answer: Fine silver jewelry, or filigree work, can be cleaned and rewhitened in the following manner: Take one ounce of borax and dissolve in 8 ounces of water. Put the articles to be cleaned in a porcelain dish with the solution, placing it over an alcohol lamp for ten minutes and allow to boil. A clean pickle, composed of one part sulphuric acid to 20 parts of water, should be kept in a clean copper or porcelain dish, and when ready for use should be hot. Take the articles from the boiling borax, place them on a piece of charcoal, and with your alcohol lamp and blowpipe, bring them to a dull red heat. Having satisfied yourself that the articles are thoroughly and equally heated, let them drop into the hot pickle, being careful as soon as the article whitens, to remove it from the pickle and into hot water, immediately washing it with a soft clean brush, using aqua ammonia and soap, and dry in boxwood sawdust. The parts required to be bright should be touched up with a burnisher. Great care must be taken that everything you use is clean and in good order.

**RST: What can I do to prevent the detent from loosening from the detent screw thus causing the stem and crown to come out after the watch has been out in the customer's hands for a short time? What does one do to a click post which is worn down by having the screw brought to bear too forcefully against it, thus preventing the click from performing its normal function? I reamed out the entire post and friction fit a new one, drilling and tapping it, but this seems like a lot of work for the ordinary commercial grade watch**

**where this fault most usually occurs. Then, too, getting paid for this kind of job presents another problem since, in this community, so many customers think that the repairman should be able to wave a magic wand and produce results for a dollar or two. Since there must be some quick and easy way to remedy the trouble, I would appreciate knowing what it is.**

Answer: In regard to your first question, it is evident that the part of the screw passing through the plate is too short, and while you can tighten the detent, the detent itself is locked tight to the plate and will work loose. If you will shorten the hub on the detent screw so that the shoulder that the detent rests on comes slightly above the plate, when you tighten the screw, the detent and the screw will become a unit and actuate as a unit when you should have no further trouble. Referring to the click binding when you tighten the click screw might indicate that the click is too thick; if not, the post is too short. By undercutting the head of the click screw, leaving a small shoulder to contact the post, will then allow sufficient room for free action of the click.

**HS: Please advise if there is any oil or grease that will make easier the winding of a good many, if not most, of the waterproof watches that are on the market today. This applies to the brand new ones as well as the ones that come in for repairs. Could you also give approximate ages and brief history of the Independent Watch Company, Fredonia, New York, No. 180610; Keyless Watch Company, New York, No. 4617; New Haven Watch Company, watch No. 82109, 15-jewel; William Ellery, Boston, No. 84412.**

Answer: First question: A good lubricant that may be applied to the winding parts is to use 50/50 clock oil and Vaseline, well mixed. In large watches, where there is considerable friction, you may use straight Vaseline. The Independent Watch Company was organized in 1880 at Fredonia, New York. They later purchased the California Watch Company of San Francisco, and in 1885 sold out to the Peoria Watch Company of Peoria, Illinois. The New Haven Watch Company was organized in 1883 at New Haven, Connecticut. In 1886, the name was changed to the Trenton Watch Company. Trenton failed in 1897 and sold out to Robert H. Ingersoll & Brothers of New York City. We can find no record of the Keyless


# UNBEATABLE VALUES!

**'The Spaceman'**—17-jewel Incabloc movement in the latest style chrome top/S.B. water-resistant case with enameled-numbered bezel. Futuristic dial with luminous dots and hands. S. Sec. hand. Handsomely strapped.

**$11.50**

With Yellow G. F. Top S/B $12.50

**'The Spacewoman'**—same as above for nurses.

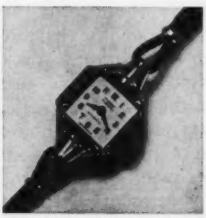
**$12.50**

With Yellow G. F. Top S/B $13.50

Water - resistant watches with 17 jewel INCABLOC shockproof, antimagnetic movements, luminous dials and hands. Beautifully finished case with stainless steel screw back—handsomely strapped.

Also available with LUMINOUS FULL NUMBER DIALS

| | Water Resist | Water Resist Auto. |
|---|---|---|
| **Gents** | | |
| ● Chrome top/SB | $10.25 | $16.00 |
| ● All steel | 11.75 | 18.25 |
| ● Yellow top/SB | 13.00 | 19.50 |
| **Nurses** | | |
| ● Chrome top/SB | 11.75 | 17.75 |
| ● All steel | 13.25 | |
| ● Yellow top/SB | 14.25 | 21.25 |



**LADIES' WATCH**

$10.45—17J 6x8 Font movement in a RGP/SB case — latest in case design—available in yellow, pink, or white — ask for No. M-46. Same in 14K, $12.25.

● Gents' All Steel Expansion Band.....$1.85
● Ladies' Gold Filled Expansion Band.....$1.95

**Plastic Watch Boxes, 75c ea.**

25% Deposit Required With C.O.D. Orders
Closeout Prices Do Not Include Postage

*We Invite You to Send for Our 1954 Catalog*

**Rubin & Co.**

**93 Nassau St., New York 38, N. Y.**

Watch Company of New York. Perhaps some of our readers might enlighten us. The William Ellery watch you have of Boston was put on the market approximately in 1864. It was made by the Waltham Watch Company.

**RLA: Many present-day watches have flat faces on both balance and cap jewels. This does not provide the necessary capillary action to hold an oil bubble in place. What is the correct oiling and inspection procedure for such plate and cap jewel assemblies? I use a hypodermic needle and syringe as a container for stem lubricant grease, and if not used for several days, I notice the grease seems to be an oil rather than a grease at the tip of the needle. Please explain.**

Answer: Referring to watches having two flat-faced jewels opposing each other that do not provide necessary capillary attraction, it is rarely that the two jewels are facing each other perfectly parallel. More often than not the two surfaces are out of parallel, consequently capillary attraction draws the oil to the narrowest place, leaving the pivots dry which is quite annoying. A good suggestion is to reverse the cap jewel so that the pivot rides on the highest point on the jewel; you will then have capillary attraction to hold the oil about the pivot. The accepted amount of oil to place in the jewels is to have an oil bubble between the two jewels about equal in diameter to the oil well of the balance jewel. In reference to the lubricant grease you are using, it might be possible that the manufacturer in making up the grease, did not have the proper properties to make a homogeneous mixture that will remain constant, and separates possibly due to the warm temperature of your room.

**FJJ: It seems to me that watchmakers would be better off if their associations would affiliate with the American Federation of Labor, and thereby form a powerful trade union after the fashion of the barbers, actors and musicians. In this way they could establish uniform working conditions and wages and price schedules, and would lessen the need for license laws. What do you think of this suggestion?**

Answer: I am not in a position to answer your question, but know this question will bring many pros and cons from our readers.

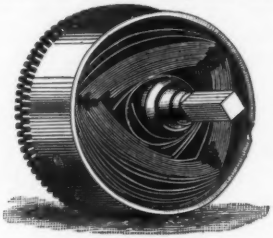
* * *

The following comments from Mr. JCD in answer to VCN, November, 1953, issue concerning his water-resistant watch that gains sometimes and no fixed amount.

**Quite often the pendant gasket may be found to grip, holding the mainspring up tight and not allowing the ratchet to move back, starting the watch to rebanking. With an already good motion, and the movement of the wearer, this may continue for some time. Instruct the customer to always give the watch crown a backward turn after winding and try it. If the trouble still persists, then change the mainspring or check the wheels for slipping. I have seen this several times and feel it is worth passing on.**

* * *

**The following is a letter and print from Mr. E.C.H. which our readers may find interesting:**



**Mainspring in 53 pieces.**

Enclosed you will find illustration of a French striking clock spring, as I found it on taking the cover from the barrel.

It being the first time that I saw one broken into so many pieces (fifty-three), it struck me to have a photograph taken of it, if only as a curiosity.

My motive in sending it to you is that you may take a drawing from it, and insert it in the A. H. & J. By doing so it may draw some remarks from your readers that will throw light as to the cause of it breaking in the manner shown.

**"I'll admit the pearls aren't matched, ma'am, but this oyster had the hiccups!"**

# NOW! HR Ev-R-last MAINSPRINGS

## Guaranteed for the LIFE of the Watch

**Here's a new, never-before-marketed mainspring, made of a special ALLOY STEEL that resists rust and is guaranteed not to break. Because they're steel, Ev-R-last mainsprings retain their power longer than premium-priced unbreakables.**

## MORE PROFIT TO YOU

***Show the Ev-R-last guarantee to your customers, and you can easily get a few dollars more for your repairs; yet Ev-R-last costs little more than regular mainsprings.***

***These 24 numbers available now— MORE will be ready soon.***

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E211 | 2 | 10 | 10½" | E473 | 5 | 11 | 11½" |
| E242 | 2 | 13 | 7½" | E475 | 5 | 11 | 13½" |
| E304 | 3 | 11 | 9½" | E485 | 5 | 13 | 9½" |
| E306 | 3 | 11 | 11½" | E536 | 6 | 10 | 10½" |
| E345 | 3½ | 11 | 14" | E536A | 6 | 10 | 11½" |
| E397 | 4 | 11 | 11½" | E542 | 6 | 11 | 11½" |
| E406 | 4 | 12 | 9½" | E545 | 6 | 11 | 13½" |
| E412 | 4 | 13 | 8½" | E599 | 7 | 10 | 10½" |
| E413 | 4 | 13 | 9½" | E601 | 7 | 10 | 11½" |
| E414 | 4 | 13 | 10½" | E609 | 7 | 11 | 10½" |
| E430 | 4½ | 13 | 10½" | E610 | 7 | 11 | 11½" |
| E460 | 5 | 10 | 10½" | E621 | 7 | 13 | 9½" |

**GUARANTEE**
This mainspring is guaranteed to be of highest quality and will be replaced free of charge if it breaks under normal conditions.

**Read this guarantee, then send in your order.**

only **$3.00** per dozen
or
cabinet No. 187 containing one each of the 24 numbers **$5.95**

***Order through your material supply house.***

**HAMMEL, RIGLANDER & CO., INC. NEW YORK 16, N. Y.**

# *Watchmakers' Contest*

A.H.&J. Reader Ideas on Practical Bench Methods, Experiences or Tools.

## RUST PREVENTIVE FOR TOOLS

CONTEST ENTRY #1

Having been a reader of A. H. & J. for quite some time I have often read about inquiries as to keeping tools from rusting, especially in the summertime. So far I have not heard of the method that I use mentioned, so I should like to offer it as my first entry in your new contest:

I find the easiest and most complete way to keep tools from rusting is to keep regular cake camphor in with all my small tools, tweezers, screwdrivers, etc. I also keep some right in the case of my staking tool and after four years you would swear it was brand new.

(I also find that an ordinary pair of fingernail clippers works better for me for closing cannon pinions than any other tool.)

## REMOVAL OF TIGHT RING

CONTEST ENTRY #2

Please consider the following suggestion as an entry in your Watch Bench Contest:

Occasionally the watchmaker is called upon to remove a ring from someone's finger which has become so tight that it is impossible to slide off.

A simple, cheap but very effective tool for this is an ordinary pair of side-cutting pliers. Attempt to slip one jaw of the pliers under the ring and cut. If this is impossible, hold the pliers perpendicular to the ring, being careful not to pinch the finger, and cut part of it at a time.

## DE-ICING TOWER CLOCK HANDS

CONTEST ENTRY #4

In the Philadelphia Inquirer newspaper under the column "Washington Background" dated last January 18, it stated "Many Virginia commuters missed busses because the city's tallest clock on the Old Post Office Building stopped, being a victim of the snowstorm. The clock's hands are wooden and couldn't carry the load of snow accumulated on them."

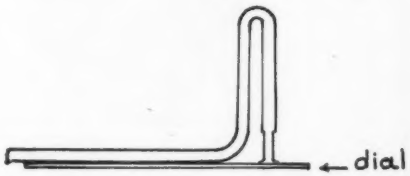
The method I devised to prevent a future stoppage on this account, is to make the hands of aluminum with rubber edges; inserted in these rubber edges are electric wires which can be heated, upon proper connection, just as the leading edges of aircraft wings are heated to break up flight icing conditions.

## REPLACING A DIAL FOOT

CONTEST ENTRY #3

At rare intervals it may be necessary to replace a foot on a dial. The method shown has proved to be satisfactory on several occasions:

First, secure a copper wire about 12 size, or at least as large as foot on dial. Place wire in lathe and turn end of wire to the shape as shown. Then tin end of wire with solder and bend wire to form loop. Position wire on dial, locating tinned end directly over spot on dial and hold loop of wire over alcohol flame. When solder melts remove loop from flame. Snip off surplus wire and file dial foot to shape.

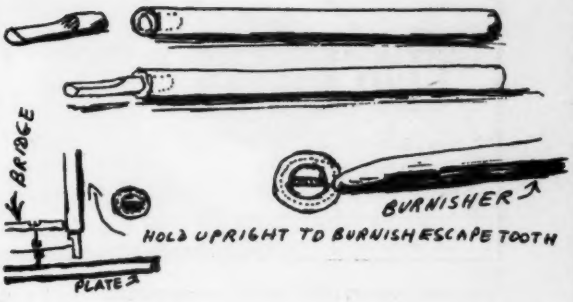


## SAPPHIRE PIVOT POLISHER

CONTEST ENTRY #5

Here is an easy way to make a sapphire pivot polisher which can be used for shortening a long tooth or to remove burrs on escape wheels.

Obtain an old clock sapphire pallet and drill a hole in either aluminum, brass or silver wire just large enough to insert the round end of pallet; put the drilled rod or wire in lathe and burnish in the pallet. Make length to suit your own taste.

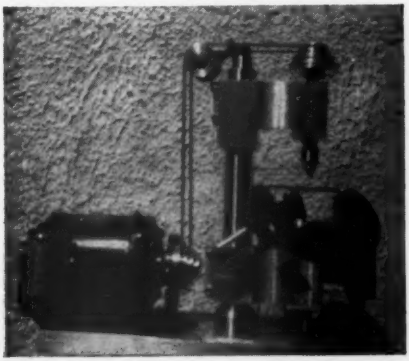



## HOMEMADE DRILL PRESS

CONTEST ENTRY #6

Herewith is a snapshot of a sensitive drill press which I made, saving nearly $200.00.

Using the tapered bearing principle, I drew up a complete workable plan. Every part of this drill press was made by me, with the exception of the drill chuck. I needed this tool badly for clock repairing, but the cost prohibited my buying one. The machining experience I gained in making it has been very helpful in clock and watch repairing, because of the precision machine tool setup and mechanical problems that had to be worked out.



There is less than .001" runout of the chuck. I used a No. 0 Jacobs 0-5/32 chuck. The total height is 14", table 4" in diameter, base 14"x6"x1". The weight is heavy enough to make bolting down unnecessary. Motor is 1/15 h.p., and various speeds are obtained with step pulleys.

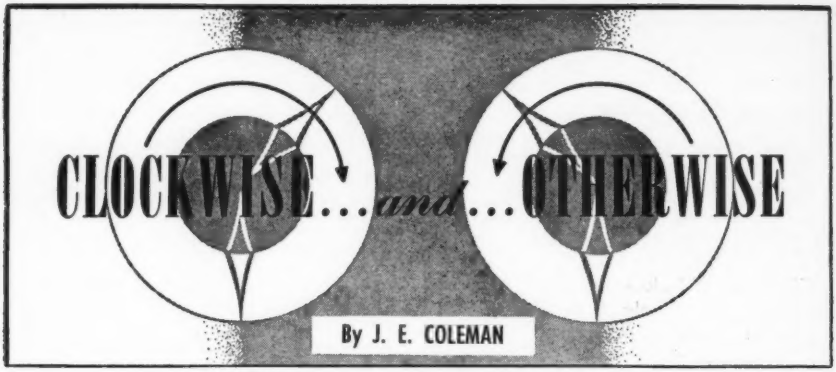
Complete plans are available if needed.

*1-2-3 winners among this month's entries will win the following prizes:*

1. **Watch-Craft tweezer and plier set; Swiss-made 5 tweezers and 3 pliers in handsome wood cabinet.**
2. **SwissCraft Incabloc assortment, consisting of 20 Incabloc staffs, 12 Incabloc springs, 12 Incabloc screws.**
3. **Algren spring bar kit; double flange, 72 assorted sizes.**

JUDGES: W. H. Samelius, Dean of American Watchmakers, Editor "Information Please," A. H. & J.
J. E. Coleman, Foremost Clock Expert, Editor "Clockwise and Otherwise," A. H. & J.
Henry B. Fried, Horological Instructor and Author, President of Horological Society of New York.

**Winners Will Be Announced in April A. H. & J.**




## OTHERWISE

Let's begin March with a suggestion—a simple one—but it is, we believe, one that will eliminate many a headache if followed. Before you ship an item to be repaired, or a part to be duplicated, to any address that you are not thoroughly familiar with, or haven't contacted in the past 90 days, first write them about it and ask for shipping instructions.

I know that the bench mechanic is a busy man—no time for long letters, stationery or the three (may soon be four) cent stamp, six if you enclose the courteous stamped envelope, and twelve cents if both are airmail. Now, your "Uncle" (Post Office) has a little device they call the reply card, sometimes called double postcard—price four cents. Get a supply of these, take your address rubber stamp and stamp your return on the return card, then before sending that fiber wheel, old verge or singing bird box across the country, send a card asking for shipping instructions, etc.

Here is the mechanical working of it. If these people don't regularly service such jobs, they'll say so and probably suggest someone who does. You have saved both time and postage. If they do, chances are they will give a special department number that will take your job to the right spot and thereby speed it up, and if they are running six weks behind, you will also get that information out front where it helps most. Last, but not least, you can convert your card to airmail by setting another two cent stamp alongside the printed one, thus a total of eight cents will give you air transport both ways.

Further, such cards are generally answered upon receipt for it only takes seconds of the receiver's time. We have heard various gripes throughout the nation—slow service, wrong shop, and a dozen others. On checking back, we believe these cards would eliminate 90% or more of them. We know from experience that all sorts of packages come in poorly addressed with no instructions, sometimes followed days later by letter, maybe a small china clock case wanting an eight-day striking movement installed when the opening is only about 2½ inches in diameter and 2 inches deep. The thing gets bogged down in correspondence, return postage and insurance, etc. Delay after delay, then the customer comes in and pounds the counter demanding delivery, somebody gets sore, then the situation is really snafu. Try that return card out front, and if it is necessary to write about the article, put first class postage on the envelope, but attach it to the parcel post package, then they both get there at the same time.

* * *

A short letter from "Mr. 400-Day" (Charles Terwilliger, Box 299A, Bronxville, New York) enclosing a new tool—

Mr. Coleman invites your questions. If your question requires a direct answer, please enclose a self-addressed, stamped envelope. It is impossible through correspondence to give valuations of antique timepieces: questions of this nature cannot be answered

# ★ REID'S CLASSIFIED VALUES ★

## • HOROLOGICAL BOOKS

"PRACTICAL BENCHWORK FOR HOROLOGISTS": 345 pages and 438 illustrations. The HOW and WHY of watch work by Louis and Samuel Levin. #1178B..... $5.00

"BULOVA MANUAL SELF-WINDING WATCHES": A complete fully illustrated manual covering the operation, disassembly, assembly, and oiling of self-winding watches. #1194B ..... $1.00

"MODERN METHODS IN HOROLOGY": 250 pages and 160 illustrations. Practical information for the young watchmaker by Grant Hood. #1187B ..... $2.50

"TESTING PRECIOUS METALS": 61 pages of valuable information on identifying, testing, buying, and selling of Old Gold and other precious metals. Will save its price many times over. #1186B ..... $3.15

"MY WATCH HAS STOPPED — WHY?": 16 pages of large scale illustrations to explain to your customer what is wrong with his watch and why repair is necessary. Helps you get higher repair prices. #1179B ..... .75

"BETTER WATCH REPAIRING—FASTER": 303 page book by Lewis & Lee interpreting Watchmaster tape recordings. Proper diagnosis of trouble speeds watch repairing. #1174B ..... $4.95

## • TRADE SERVICES

SPECIAL STAFFS: We will cut a special staff to your old sample for only ..... .75
For a perfect fit, just knock the staff from the balance and send it to us. Sorry, no cylinder staffs please. If you send the balance, old staff and roller, we will also stake and true new staff. Price for staff and staking job is only ..... $2.25
Try our fast service on your next job.

HAIRSPRING VIBRATING: Flat—$2.00 Breguet—$3.00. Our service is not cheap—just fast and accurate. Send only the balance complete, stud, collet, and balance bridge. ★

## • SITUATIONS WANTED

WATCH MATERIAL and TOOL SUPPLIER: We would like very much to be your supplier. We will gladly send you our latest catalogs and a free combination Movement and Springbar Gauge on request with your order for any item on this page. ★

## • FOR SALE—WATCH MATERIALS

BRACELET CROWNS: 100 assorted pink, white, and yellow crowns for men's and ladies' bracelet sizes. Assorted openings and posts. #C262 ..... $4.95

YELLOW ANTIQUE CROWNS: 36 assorted yellow acid test G. P. crowns for 12, 16 and 18 size. #C185 ..... $5.75

BLUE AND GILT SWISS AND AMERICAN HANDS: 144 assorted blue and gilt, hour and minute, bracelet and pocket hands for Swiss and American watches. #C250 ..... $1.95

WATERPROOF CROWNS: 24 assorted white gold filled waterproof crowns in assorted sizes, shapes, and threads for Swiss and American watches. #C322 ..... $2.95

AMERICAN CASE SCREWS: 144 assorted sizes for 0, 6, 12, 16 and 18 size American movements. #C264 ..... $2.69

HAIRSPRING MATERIALS: Gross packages of needed materials. #C112. Stud Pins—50c. #C113. Studs—$1.50. #C114. Collets—$1.35. #C115. Regulator Pins—50c. #C194. Regulator Keys—$1.00.

SWISS SECOND HANDS: 30 hands in a wide variety including regular and sweep styles in blue, gilt, radium and red. #C222A ..... $1.95

## • FOR SALE—TOOLS

BALANCE TRUING CALIPER: Handles both bracelet and pocket balances. Parallel opening type with universal index. Made in U.S.A. to sell for $6.00. #D626X ..... $2.89

DAZOR FLOURESCENT BENCH LAMP: Adjusts to any position with a touch and stays put. Helps prevent eye strain. #2134-16 ..... $21.75
Two 15" flourescent tubes to fit. #L22A... $ 1.40

L & R MASTER CLEANING MACHINE: This $76.50 machine can be purchased on a "Pay as You Use" basis. Terms are $10.50 down and $11.00 per month. No carrying charge. #L3 L & R Master Cleaning machine complete with one quart each cleaner and rinse. $76.50

## • FOR SALE—MISCELLANEOUS

ASSORTED WATCH STRAPS: Freshly carded watch straps—all 75c to $2.00 retailers accumulated from broken cards. Assorted lengths, colors, widths, and leathers. #C140L. 3 doz.—$9.75. #C141L. 1 doz.— $3.50

LUMINOUS COMPOUND IN NEEDLE POINT TUBES: Refinish hands and dials quickly — without special tools or fuss. Order #D95. Green and #D96. Yellow. Per tube..... $1.25

BURTON M. REID SONS INC.
1st and Washington. "The House of Friendly Service" Springfield, Illinois

the 400-day pallet adjusting tool. Many repairmen do not have a depthing tool, and some of those who do have one still prefer to adjust the pallets on the 400-day while the escape and verge arbors are still mounted between the plates, loosening the screws that hold the pallets slightly and shifting them in or out by squeezing with pliers. A time-killing method because you always move it too much.

This little device is one that we discussed with Mr. Terwilliger last fall. He liked the idea, made some changes and put it into production. The handle is reversible so it can be made left or right as the occasion demands. The actual pallet moving is done by screw pressure and is therefore under absolute control. Allow the pallet to extend through the slot and apply screw to top, then you push it in just the desired amount, keep the tool in the same position but set one wing of the fork under the pallet, apply the screw pressure to the verge, and you may pull the pallet out just as little as required. Available from your regular supply house or direct, $3.00 each.

* * *

Another item which we are interested in because we had a "hand in it" is a partial answer to the verge question. The Young-Neal Company, Chamber of Commerce Building, Nashville, Tennessee, is marketing material from which you can conveniently make verges. It is simply a little envelope containing three annealed pieces of steel the correct thickness and width, three crutch wires and three blanks for making the saddle—enough for three complete verges; $1.00.

Brooks Palmer sent a card on the H. R. Chadsey (1 Reynolds Street, Wickford, Rhode Island) query, page 44, January, 1954, A.H.&J., re a Robert MacNab clock. Mr. Palmer says, "MacNab listed in "Old Scottish Clockmakers" as about 1800. Good cooperation, and we appreciate it.

* * *

Arthur Tremayne (N.A.G. Press, London) sends a copy of their latest release, a 157-page, 8½x5½, well illustrated volume titled "Gears for Small Mechanisms," by W. O. Davis. The author is not a newcomer to the horological field despite this being his first book. The success of his lectures to the British Horological Institute in London prompted the publishers to urge him to put it in book form. He is an engineer with more than 20 years' experience in the specialized field of small gearing and has a number of inventions to his credit. When the clock industry was re-established in Britain following World War II, Mr. Davis played an important part in it through his firm S. Smith & Sons.

We have observed from the many questions sent the column that the interest in gearing and wheel cutting is on the upsurge to a marked degree, thus this publication is timely. Students and apprentices, as well as the finished workman, will discover in it a really authentic reference book for all their small gearing problems. We are so enthused over it that I'm tempted to list each chapter title: 1, Introduction; 2, Theory; 3, Theory, continued; 4, Gearing Employed in Watches and Clocks; 5, Gearing Employed in Watches and Clocks, continued; 6, Friction; 7, Load Capacity of Clock and Instrument Gears; 8, Cutting and Generating Clock and Instrument Gears; 9, Hobbing Involute Gears; 10, Milling Cutters for Gears; 11, Finishing Teeth; 12, Systems of Addendum Correction; 13, Tooth Form on Helical Wheels; 14, Worm Gears in Instruments; 15, Instrument Beveled Wheels; 16, Scale Effect on Small Gears; 17, Precision of Manufacture; 18, Precision of Operation; 19, Miscellaneous Problems; 20, Measuring and Testing Fine Pitch Gears. Price $5.00 plus postage.

* * *

Mr. Merritt Paulson sends their latest catalogue titled, "The World's Largest Selection of Electric Clock Motors and Coils," an 8-page folder of interest to all repairing electric clocks. If you haven't received yours, drop him a card to 131 South Wabash Avenue, Chicago, Illinois. You might add C. & O. told you.

* * *

C. I. Walls (Washburn, North Dakota) asked us (page 30, December issue) about Imperial Electric. At that time we had no data and no lead. Last month, Mr. William Phelps wrote Mr. Samelius about the same clock (make) and gave patent date of May 4, 1909. We located brief mention

in one of the trade journals of that year, and were then able to trace it by advertisements to Granite City, Illinois. Also by sending Mr. Phelps one of the cuts from an advertisement he was able to dope out the missing parts.

We wrote for patent copy and began to check in Granite City. A Mr. August Feraud was located who writes, "My brothers, Francis and Joseph, who invented the Imperial clock, together with myself, opened a factory in Granite City, Illinois, about 1908. After a few years, we organized a company and moved to St. Louis, Illinois, then we sold our interest to others and they moved the factory to a town now called Imperial, Missouri, after the clock factory. These people sold their interest in the company to an organ manufacturer in Highland, Illinois, and he continued to manufacture Imperial clocks until a few years ago."

Inquiry at Highland brought a gracious reply (two full pages) from A. W. Fowler of the C. J. Hug Company, manufacturers of self-starting Imperial electric clocks. Mr. Fowler substantiated what Mr. Feraud wrote, and taking up the story there (at Imperial, Missouri) says, "After the factory was built and the town founded, the company was again in embarrassing financial circumstances and the St. Louis interest, in order to protect their investment, removed the assets to St. Louis, leasing a place on Rutger Street just east of Grand Avenue. This brought the matter up to was necessary. A man by the name of the first World War. For a time the manufacture of clocks was discontinued and they secured some war contracts that kept them operating all during the war. However, for some reason the operations were not profitable, and after the war additional capital George A. Abell invested in the company and became its manager. The company continued in operation until 1920 when it became insolvent and Mr. Abell was appointed trustee.

"At that time the writer, who was 26 years old, purchased the assets of the Imperial Clock Company, and organized a new company under the laws of Illinois, and removed the assets to a factory building at Collinsville, Illinois, at the intersection of Main Street and Morrison Avenue. We operated there for one year, moved to

NEW!
finest GUARANTEED
CRYSTAL in all the world
GEM CLEAR
PERMA-BONDED
SILBERT'S Premium LUCITE CRYSTAL
EXCLUSIVE GUARANTEE FOR ONE FULL YEAR AGAINST
• BREAKAGE
• CHIPPING
• DUST SEEPAGE
• DISCOLORATION
and guaranteed against
DISCOLORATION ON THE DIAL... a SILBERT exclusive...we'll refinish any dial proved discolored through crystal failure
SAVE UP TO 1/3
Round.....$ .75
Regular..... 1.00
Cylinder, Flat top or Facet..... 1.50
SILBERT "EXTRAS"
• Postage Paid Both Ways
• Same Day Service
• Lowest By-Mail Prices
• Imprinted Shipping and Mailing Envelopes
• Free Containers
One trial will convince you... send us your Crystal orders
M. J. SILBERT & CO.
ELGIN, ILLINOIS

Highland, Illinois, in 1922, and have operated here ever since.

"We discontinued the manufacture of the battery operated clock about 1928. In the meantime, the writer invented an electrically wound clock, but still a pendulum clock, and prior to the time the synchronous clock upset most of the clock factories at that time. The pendulum clock required large cases to house the movement, and about 1929 we resorted to marine escapements with 11 jewels; about 1933 we commenced manufacturing movements with synchronous motors.

"Over a period of years the writer developed and patented a striking mechanism and Westminster chimes mechanism, and started to manufacture these clocks about 1940. Immediately after World War II, C. H. Hug and his son, J. C. Hug, became interested in the manufacture of Westminster chimes. The name of the company was changed to C. J. Hug Company, Inc., but the trade name of the clock continued under the name 'Imperial.' The movement is the simplest of construction, and the smallest movement being manufactured. This enables us to install them in small cases of exceptional design and they are meeting with constant trade approval."

Mr. Fowler enclosed a folder illustrating their new clocks. It is a very stylish looking line, but I shall have to confess that we haven't seen them in this part of the country; at least they are not coming to the repair bench. We especially appreciate Mr. Fowler's cooperation, and shall see one of these movements shortly for a detailed description of its working.

Mr. Phelps made a careful sketch of the movement, measurements, etc., and sends the column an 8x10 print for the files—good cooperation, too. While on the subject of battery clocks, let me say the column is very much interested in any and all data pertaining to American-made battery clocks, and will appreciate any information, leads, etc. Once we begin delving into it, it is simply amazing the great number made in the fifty-year period from 1890 to 1940, and at this point I would simply not hazard a guess, but the average must be somewhere between two and six per year. Most clockmakers are familiar with the "Tiffany Never-Wind," the "Poole," the "New York Standard," and others, but this scarcely scratches the surface. Henry E. Warren of Telechron synchronous fame, made a battery driven pendulum clock before he perfected the synchronous motor, and Mr. Amos G. Avery, president of The Watch & Clock Collectors Association, who has two of them, has loaned us one for photos, sketches and study. We've already had a couple of letters from Mr. Warren about it.

You have already detected from the Imperial story above that both Mr. Feraud and Mr. Fowler are still quite active. American-made battery clocks are to be a special project of the column for 1954, and a feature of it will be to contact those with actual first-hand knowledge, the inventor if possible. It isn't necessary to add that it goes into the files for the benefit of any who may send in questions, so if you own an odd battery clock or have knowledge of one, secure as much definite data as possible such as place of manufacture, patent date or number, etc., jot it down on a card and fire it in. Had the file contained what it does now, we could have answered Mr. Walls' query promptly and concisely, and I must add that we have that now purely through cooperation.

* * *

Mark F. Massey, 752 Silver Spring Avenue, Silver Spring, Maryland, caught the plea for information on the Grossmann translations and writes a nice letter. In conclusion he asks, "What can you tell me of: 1, The Stahlberg Clock Company, Chicago, Illinois, which was incorporated in 1893? 2, The Imperial Electric Clock Company, Granite City, Illinois? 3, The Electro Clock, sold by George R. Macey, New York, 1909? 4, The Brown Street Clock Company, Monessen, Pennsylvania, in business in 1913? 5, The Sphygmometer?" With the exception of the Imperial, we'll have to do some checking, and any help from readers will be appreciated.

* * *

It is well known that one's best bargain in books is from the United States Government Printing Office, Division of Public Documents, Washington 25, D. C. The column has just received the latest list of publications relating to watches and clocks

it's new! **PEER RING GUARDS**

**bring customers into your store**

**The attractive two-color display card really sells for you. It shows PEER, the only guard that fits on the front of stone set rings and prevents the ring from turning on the finger.**

**14kt gold**

**No. 53-540 Assorted yellow and white**
**No. 53-541 Yellow**
**No. 53-545 White**
**$9.60**
**per card of 12**

**1/10 — 14kt gold-filled**

**No. 53-556 Assorted yellow and white**
**No. 53-542 Yellow**
**No. 53-546 White**
**$4.95**
**per card of 12**

**1 dozen guards — of 3 sizes — on each card**

***Order from your dealer***

HAMMEL, RIGLANDER & CO., INC., NEW YORK 16, N. Y.

as follows: "Manual for Overhaul, Repair and Handling of Hamilton Ship Chronometer," catalogue number N8ss-2270, 50c; "Manual for Overhaul, Repair and Handling of Hamilton 35 Size Chronometer Watch," catalogue number M210, 6-c., 40c; "Manual for Overhaul, Repair, etc., Navy Mechanical Boat and Deck Clocks, Chelsea," catalogue number D211, 6-c., $1.00 (the same for Seth Thomas type); catalogue number D211, 6-c., 6 2/2, $1.25; "Ordnance Maintenance, Wrist Watches, Pocket Watches, Stop Watches," catalogue number W1.35; 9-1575, 50c; "Post-War Watch Market," catalogue number C18. 271:21, 20c; "Watches, Watch Movements, Watch Parts, etc., Report to President on Escape Clause Investigation," catalogue number TC 1.9; 176, 30c.

Rules require remittance with order; check or money order should be made payable to the Superintendent of Documents, and mailed to the above address. Stamps not acceptable. To those who may not be familiar with these manuals, I will say they are most complete—take you step by step through every move with excellent line drawings. The "Mechanical Boat and Deck Manual, Seth Thomas type" has 135 pages, is 7¾x10, with stiff covers. (Note: Does not include ship's bell striking movements.)

* * *

Paul Hoffman, 43-09 Fortieth Street, Sunnyside, Long Island, New York, writes that he is now settled in his new location; has received two large orders for special wheel cutters as well as other equipment, and is now doing miniature machining, wheel-cutting, pinion-cutting for the trade, and is including the duplication of wood clock wheels and pinions.

* * *

R. C. Morrell has been appointed curator of the Bristol Clock Museum, 100 Maple Street, Bristol, Connecticut; received a letter from him this week saying they have scheduled the opening for April 9th to subscribers, and thereafter on a regular schedule. The Bristol Museum is going to be a "must" on the list of everyone interested in American clocks and American clockmaking who visits anywhere in the New England states.

Edward Ingraham and Charles T. Treadway have turned their collections and their libraries over to it. These are probably the two top collections in existence today. The museum has a vast amount of other material and being located at Bristol, the cradle of American clockmaking, bids fair to become a clockmakers' shrine in a very short time.

Jan and I will be right here again next month pleading for cooperation.

J. & J.

## CLOCKWISE

*Dear Mr. Coleman:*

*I am situated in a community where until we opened our store, the people had to mail their repair work out. The idea that some people cannot wear a watch because they have too much electricity in their bodies is widespread. It is, to my surprise, still advocated by some watchmakers in nearby towns. Can you suggest what might be the best argument to squelch this belief by my customers?*

*I have had some people testify that they are not successful in getting a watch to run properly until they buy a leather strap that goes under the watch. Is there any merit to this belief, and if so, why might it be true?*

KEITH L. HAIST
*% Mullen Jewelry Company*
*Mullen, Nebraska*

Dear Mr. Haist:

This is an old one, and I'm sorry to have to admit that it is still being perpetuated right down into this atomic age. Ignorance or incompetence, sometimes a combination of the two, keep it alive. At the bottom of it is a simple play on words. "Personal magnetism" is a well-known phrase or term, and generally accepted by everyone without stopping to realize that it is not mechanical magnetism.

The word "magnetism" is used in a descriptive sense merely to indicate that someone has such a nature or disposition so as to attract others to him as a magnet attracts. Had it been made "personal attraction" instead of "personal magnetism," possibly these jokers would not have been able to keep the hoax alive so long.

Just before Christmas a friend came to me and said a watchmaker had told his wife the reason her watch would not run was because she had too much magnetism. We did our best to make a reasonable explanation (like above) and asked him for a bit of cooperation. This watchmaker had plainly fallen down on the job and was using the old magnetism hoax as an out. In view of the fact that he contended the watch was in order and that its failure to run was solely due to his wife's magnetism, we suggested that she have her sister and friends try it. Needless to say, after five tries on five separate people, the piece failed to tick more than a few minutes. The watch was a high grade one by one of our largest manufacturers and barely a year old. We then took it to a very good and careful man, had him pull it down and make an examination on the spot. He could not and did not find anything he could criticize. The watch was clean, well oiled (not too much or too little), there were no fingerprints, no burred screws or other tell-tale marks of the incompetent workman or botch.

We left and within an hour this last watchmaker phoned to say he had located the trouble when he started to reassemble it. The escape wheel was slightly loose on its arbor. It was delivered two days later with a nominal charge and on last check was running quite satisfactorily.

It's my guess the first mechanic may have honestly tried, leastways he turned out a good cleaning job. He could have carried it to another watchmaker for help, or he could have given it back to the customer with no charge, but he did neither —he delivered it and collected. I seriously doubt if he actually timed it or got any run on his repair-rack.

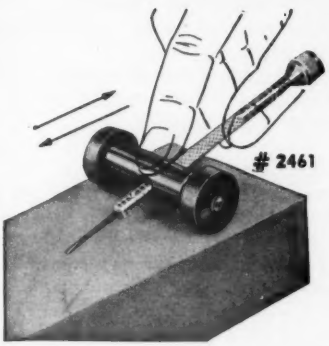
Any time they come up with a person who can't go near a surveyor's transit without deflecting its needle or can't get near a radio or television set without disturbing it, or whose car spark plugs won't fire as soon as he hits the driver's spot, then I'll begin to believe the magnetism hokum. There is absolutely no virtue, insofar as the mechanical action of a watch is affected, in placing leather or any other substance between the case and the wearer's arm. You (and all of us) have had customers

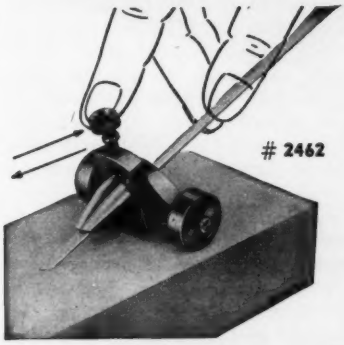
**"BERGEON"**

**SCREWDRIVER AND GRAVER SHARPENERS**

A most important and practical tool for every watchmaker's and jeweler's bench. With these tools, it is a relatively simple task to resharpen your screwdriver blades and gravers so that they can be reused again and again.

PRICE: **$3.00** each




**Distributed Exclusively by**
**B. Jadow, Inc., New York**
***Through Wholesalers Only***


come in with weird tales about timepieces (watches or clocks) with which certain incidents have taken place, and they deduce immediately that is what stopped the piece from running. It doesn't automatically follow that their deduction is correct or even mechanical. Remember the timepiece is mechanical. Investigate carefully some of these stories with that in mind, do a bit of logical reasoning on it and you will come up with quite a different answer.

J. E. C.

*Dear Mr. Coleman:*

*I have only recently added my name to the list of subscribers to the American Horologist and Jeweler magazine. I enjoy your very informative column, Clockwise & Otherwise, very much.*

*I do only a limited amount of clock repairing and like most other clock repairmen, have problems regarding same. I received the last U.H.A.A. service bulletin on the Ato thousand-day battery clock, coincidentally, only about two days after a customer had brought in the first such clock we had seen. It had a broken suspension spring and so far, we have been unable to find one for it. I wonder if you can tell me where we might find parts for these clocks? Also, can you tell us who imports them and the retail price of them?*

HAROLD C. FISCUS
*105 Putnam Street*
*Marietta, Ohio*

Dear Mr. Fiscus:

The Ato battery clock is manufactured by the Junghans Clock Company in Germany. Your C &O column has very little contact with retail sales and at the moment don't have the advertised retail price of the Ato at hand.

Henry Coehler Company, 101 Fifth Avenue, New York 1, New York, is the U. S. agent and importer. They can supply the correct suspension spring, and any other material you require for repair and servicing this clock.

J. E. C.

*Dear Mr. Coleman:*

*Being a watchmaker at heart and a naval officer by profession, I have the opportunity to visit with many watchmakers and material houses, both abroad and in the United States.*

*During my last visit to Valencia, Spain*

*(January 9 to 15, 1954), I went antique hunting. After combing the old walled city of Valencia, I came in contact with an old Spanish watchmaker, eighty-five years old. This old gentleman had graduated from medical school at the age of twenty-four, in 1893, and had never practiced medicine, but instead took up watchmaking.*

*After talking (with the aid of an interpreter) with this gentleman for about three hours, he took me to his home where he showed me his collection of about 35 or 40 rare old timepieces. To me they were real antiques from the word go. As I was leaving he offered me one of the watches from his collection. You might say he gave it to me, as he asked for four hundred pesitos or about ten dollars.*

*This watch is an 18S, fusee key wind, full jeweled (diamond balance jewel) and a marine chronometer escapement with a true helical balance spring. The dial is made of silver, and in the center of the dial is a raised gold flower design bounded by Roman numerals, with raised silver minute markings, then more raised gold flower designs. Just above the second hand the name Ch. H. Crosclaude Fleurier is printed, and on the back plate the following is engraved: Ch. H. Crosclaude JC, Fleurier No. 29386. This old timepiece is in perfect running condition and keeps perfect time.*

*Any information you are able to give me in regard to the above watch will be greatly appreciated.*

LT. J. L. PENOLA, U.S.N.
*U.S.S. Arcadia (AD-23)*
*F.P.O., New York, N. Y.*

Dear Lt. Penola:

It's real good to get a letter with a ship's postmark on it, having put a few on myself. I regret all the more to have to say we cannot locate this maker in any of the lists at hand.

Fleurier is a small town west by southwest of Neuchatel, Switzerland, about 17 miles distant. I'm sure that a letter directed to maire's office would either be answered promptly or turned over to the local guild secretary and would ultimately bring all the desired information. Or directed to Ernest Borel Watch Company at Neuchatel might be the best bet.

You must have had a delightful time in the old portion of Valencia. We've had a few first-hand reports, but none recently. I recall that Major Paul Chamberlain found it exceptionally rich in ancient timepieces, and that practically none of them were of Spanish origin. I'm wondering if you might supply a Valencia watchmaker's address who writes English?

J. E. C.

*Dear Mr. Coleman:*

*I have an 18S, 15-jewel Illinois pocket watch with a gold hunting case, and stem wind, lever set. It has a place in the back for a key wind; also, the movement No. is 1067494. It is in good running condition and looks like a new watch; case is engraved. Would you please tell me how old the watch is and if it has any value as a collector's item?*

WALTER B. COLVER
*902 North Story Avenue*
*Wagoner, Oklahoma*

Dear Mr. Colver:

The Illinois Watch Company, Springfield, Illinois, is listed as having made watches No. 460,000 to No. 1,120,000 from 1880 to 1885. Your No. 1,067,494 falls within this numbering.

We definitely never appraise or value pieces, and saying whether or not a piece definitely has value as a collector's item is just as difficult. All too often if one says a piece has definite value to a collector, it immediately conveys the thought of a premium price—something up in the big figures. Now, to a collector endeavoring to assemble representative models of all U. S. made watches and who did not have an 18S Illinois, it would certainly have some value as a collector's item. Chances are it might bring as much as when new, but 18S movements were pretty cheap in 1885. The point is, such movements are not rare.

J. E. C.

*Dear Mr. Coleman:*

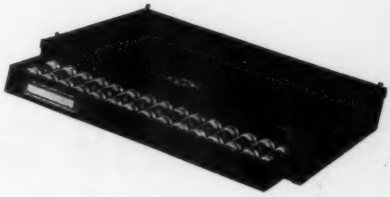
*I have an old clock just recently brought back from Sweden (although made in this country) for repair, and the owner would like to know how old this clock is and its history.*

*The clock is weight driven and strikes*

# HERE'S A MONEY SAVER!

**IT'S THE NO. 645C NEWALLIZED STEM SYSTEM**

1. **144 High Quality Stems**
2. **Over 450 Model Coverage**
3. **Only Popular numbers included**
4. **All stems individually bottled**



NO. 645C NEWALL STEM SYSTEM

**THE NEWALLIZED STEM SYSTEM NO. 645C** contains 144 high quality stems. All stems are of the latest and most popular models, including Automatics, Calendars and Sweep Second models.

The No. 645C Stem System is protected by a sturdy steel one drawer cabinet and a handy reference chart is included for convenience. At your jobbers now for only **$23.00.**

**THE NEWALL MFG. CO.** **Chicago 2, Illinois**


*on the hour only. The cords go from the main wheel drum up to the top of the clock over small pulleys, and then down. The plates are 4 11/16" high, 3 11/16" wide and 1 11/16" deep or thick, from front to back. The pendulum rod is 11⅛" long. I am sending you a facsimile of the large label inside of the clock. Any information you can give me regarding this clock will be greatly appreciated.*

A. M. LARSON

*4530 Guilford Avenue*
*Detroit 24, Michigan*

Dear Mr. Larson:

At one time, Chauncey Jerome (born June 10, 1793, died April 20, 1868) was the largest American exporter of clocks, and it isn't too unusual to run across one that has found its way back to the U.S.A.

Mr. Jerome was one of the most colorful characters in the clockmaking business, being in and out of several firms from about 1824 to about 1860. He at one time maintained two large factories in Bristol with an additional assembly plant at New Haven. The Bristol plants were destroyed by fire in 1845. Since your clock is labeled "Jerome & Company. New Haven, Connecticut" and in 1850 there was a reorganization that changed the name to "Jerome Manufacturing Company," I'd guess that between the 1845 fire and the reorganization, 1850 would be about the right date for it.

Mr. Jerome wrote "American Clockmaking,' a 144-page history, largely personal, in 1860. Chances are your local library has a copy. I can recommend it—both you and your customer will enjoy it.

J. E. C.

*Dear Mr. Coleman:*

*I recently took in a Keininger & Oberfell after someone else had monkeyed with it. There was no mainspring in the barrel among other things, and I put in what my supplier sent me. No adjustment or combination thereof would make it run when fully wound—it would either stop or race. Only after realizing about half the power did it settle down and is now running fine, but this makes it, in effect, a 200-day clock.*

*Am I correct in assuming that I put in the wrong mainspring? If so, what is the correct one? These clocks have been made*

# ONE STANDA

## FOR ALL

## THE GUARANTEED P

**UNCONDITIONALLY GUARANTEED FOREV**

**All Your Material**

**RUST—MOISTURE—DUST**

## One Standard Envelope

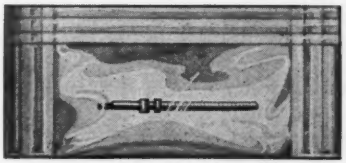
## One Standard Add-A-

- **A Size to Fit Every Repair Department**
- **A Size to Fit Your Needs**
- **A Price You Can Afford to Pay**
  **From $10.00 to $5000.00**

# C. & E. MARSHALL

# ARD PACKAGE
## LL MATERIAL

## D PERMATEX PACKAGE
**FOREVER TO PROTECT**
**laterial from Loss Due to**
**DUST–CORROSION**



## ope—One Standard Cabinet
# -A-Unit Envelope System

***More Than 2500***
***Repair Possibilities***
***For Only $26.80***

The best and most frequently used 72 Staffs and 72 Stems, each in individual envelope and in RUST-PROOF PERMATEX PACKAGE. Separately numbered indexes for more than 350 Staffs and 225 Stems for future expansion. Complete interchangeability shown in Marshall Handy Manual supplied FREE. In 2 drawer Standard Size Steel Cabinet. No. HKN4236E.

# LL CO.

**BOX 7737 CHICAGO 80, ILLINOIS**

**Branches and Distributors**
**in Principal Cities Throughout the U. S. A.**

*for about 75 years and yet I still don't find much concrete printed information concerning them.*

EMIL BACKMAN

*Box 316*
*Bayport, Long Island, New York*

Dear Mr. Backman:

Why, you sound as if you haven't been reading A.H.&J. lately. Possibly the most complete coverage of the 400-day clock ran in two articles in the January and February, 1950, issues and back copies may be ordered from the circulation department.

Since that date, I've wedged so much into Clockwise and Otherwise on 400-day clocks that some of our readers have written in with complaints. Whether the spring you now have in this clock is too strong or not is a question, and I would not assume that it is unless I was sure that the clock is otherwise in order—correct suspension spring correctly installed with the escapement set as it should be. Write to Mr. Charles R. Terwilliger, Box 299, Bronxville, New York, for his circular on 400-day Horolovar mainsprings.

J. E. C.

*Dear Mr. Coleman:*

*Several years ago we had a small booklet called "The Tower Clock and How to Make It." It was a short discourse on a large clock built by students in one of the northeastern universities, I think.*

*Recently we have had occasion to refer to this work and after looking the place over time and again, we think it is lost. Book sellers tell us this work is out of print and cannot be had. However, we thought you might know of an old copy somewhere which we might obtain for our use, either purchase or rent for a short time. Thank you in advance for any information.*

MONROE WHETSELL

*844 Fifth Street*
*Corbin, Kentucky*

Dear Mr. Whetsell:

The volume you refer to must be "The Tower Clock and How to Make It" by E. B. Ferson. Mr. Ferson was the instructor in drawing and machine design at the Chicago Manual Training School of the University of Chicago.

Hazlitt and Walker first published the book in 1903, but it has long been out of print and we feel that a loose copy might be pretty hard to locate. Possibly one of our readers may have one that he would be willing to part with or know of one you might buy.

I have a copy in my file and I am sending it to you to borrow. Take good care of it and when you've finished, please return it to me by registered mail.

J. E. C.

*Dear Mr. Coleman:*

*I thank you for the pleasure you give me reading your Clockwise & Otherwise. I was under the impression that the A.H.&J. was the only trade journal published today. Will you please inform us what other ones are published, the address and subscription price if possible?*

*Further, when one buys brass for clocks, what does he ask for in the hardware store? Hardening brass by hammering and filing it flat seems an awful waste of time nowadays. Your information will be greatly appreciated.*

WALTER OTT

*118 West 13th Avenue*
*Escondido, California*

Dear Mr. Ott:

Your first question becomes difficult since we do not have your definition of trade journal. Several monthly publications of today lean very heavily on the merchandising of jewelry, watches and clocks and devote only a small percentage of space to repairing and items of interest to the practical bench mechanic.

The Jewelers' Circular-Keystone is published at 100 East 42nd Street, New York 17, New York. Mr. Lansford F. King is editor; subscription price $3.00. The National Jeweler, 216 West Jackson Boulevard, Chicago 6, Illinois, George Englehard, editor, sent free to retail jewelers listed by Jewelers' Board of Trade, also to listed material distributors and listed repairers. H. I. A. Journal, editorial office 2026 Laurel Court, Falls Church, Virginia, $3.00. Southern Jeweler, 75 Third Street, N.W., Atlanta, Georgia. Charles Fram, editor, $2.00. Mid-Continent Jeweler, 1006 Grand Avenue, Kansas City 6, Missouri. Northwestern Jeweler, 142 West Main

# —GENUINE PM STEMS AND STAFFS—

***Are Available for All***

## SWISS and AMERICAN WATCHES

**YOUR GUARANTEE!** PM Stems and Staffs carry our unconditional guarantee on every envelope—your assurance of perfect fit and uncompromising quality!

PM

*Ask for PM Products by Name—*

*Order from your Jobber!*

## P. MEREMINSKY

*Sole Distributors*

**15 MAIDEN LANE • NEW YORK 38**


Street, Albert Lea, Minnesota. Revue Francaise des Bijoutiers Horlogers, 7 F. D. Roosevelt Avenue, Paris 8, France, $7.00. Journal Suisse d'Horlogerie et de Bijouterie, English edition, from the American Horologist and Jeweler, Circulation Department, $5.00. Horological Journal, 226 Latymer Court, Hammersmith, London, W. 6, England, Arthur Tremayne, editor, $2.00. (I believe you can arrange subscription through A.H.&J. Circulation Dept.). Pacific Goldsmith, 657 Mission Street, San Francisco 5, California.

Brass comes soft, half-hard and hard. Evidently you have clock plates in mind and hammering and filing is certainly passe. By the way, if you subscribe to some of the above, just make a note and say Clockwise & Otherwise sent you.

J. E. C.

*Dear Mr. Coleman:*

*I would like some information on a Seth Thomas clock. I am a watchmaker, but do a lot of clock repairing, too. I have several questions I would like answered. 1. Where can I get a new verge or have one made? (The old one is broken.) 2. Where can I have a new escape wheel made? (I have the old one, but it is badly worn.) 3. How can I figure out the length and weight of the suspension spring and pendulum? (The pendulum and suspension spring are missing.)*

*The clock is weight driven and has S. Thomas, Plymouth, Connecticut, U.S.A. on the face side of the plate. It is an 8-day clock, one-half and hour strike, the works are of brass, and on the inside of the case it has Seth Thomas, Thomaston, Connecticut, and directions for the care of the clock. The case is approximately 25x15½ inches. Also, can you give me the approximate age of this clock?*

L. B. GOTTSCHALK

*430 Sunnyside*
*Dallas 11, Texas*

Dr. Mr. Gottschalk:

1. Clock verges have not been made in several years, and the supply on hand and in material houses has long since been consumed. The nearest thing we know of is a little kit being marketed by the Young-Neal Company, 314 Fourth Avenue, Nashville 3, Tennessee. It simply contains blanks for the making of three verges

and sells for $1.00 plus postage.

2. William A. Phelps, 4106½ Glenway Avenue, Cincinnati 5, Ohio, will cut a new escape wheel to your old sample. 3. The figures requested in this question are not at all critical—any material house (including that mentioned above) can supply you with a pendulum rod, spring attached, and an 8-day, fish-eye pendulum ball, from your general description of this clock, that will work quite satisfactorily.

About 1866 the name was changed from Plymouth Hollow to Thomaston, and since your movement is marked Plymouth, and the label Thomaston, it is quite possible that this clock was made before the supply of plates marked Plymouth were used up, and after those labels with Plymouth had been used, thus the new label.

J. E. C.

*Dear Mr. Coleman:*

*Time Jewelry of Brainerd, Minnesota, suggested that I write to you for information about old clocks, especially those invented by Eli Terry. I have a clock of my great-grandfather's which was bought in 1840 or before, and is still running.*

*It has all wooden wheels, except the one the pendulum swings on, which is brass. It was invented by Eli Terry, but I can find no date of manufacture. I would appreciate it if you could tell me where to find this information.*

JOE R. WEBBER

*Star Route*
*Brainerd, Minnesota*

Dear Mr. Webber:

Eli Terry, Sr., the oldest child of Samuel and Hulda (Burnham) Terry, was born at East Windsor (now South Windsor), Connecticut, April 13, 1772, and died at Terryville, Connecticut, February 24, 1852.

Following are the approximate dates of his prinicpal firms: 1792 to 1793—Eli Terry, East Windsor, Connecticut, 8-day brass movements, tall cases; 1794—Eli Terry, Northbury, both brass and wooden movements for tall cases; 1807 to 1808—Eli Terry, Greystone (a part of Plymouth); 1809 to 1810—Terry, Thomas and Hoadley; 1810 to 1818—Eli Terry, Plymouth; 1818 to 1824—E. Terry and Sons, Plymouth; 1824 to 1827—Eli and Samuel Terry, Plymouth; 1824 to 1833—E. Terry and Son, Plymouth; 1833 to 1852—Eli Terry, Plymouth.

You do not describe your clock—long case or shelf, etc., and neither give complete wording of the label. There were many clocks made whose label bore the line, "Invented by Eli Terry." Some makers (especially Seth Thomas) purchased the right to manufacture, but far more pirated both the mechanical design, and in some way contrived to work the name "Eli Terry" on to their labels. The manufacture of wooden movement clocks ceased abruptly with the great panic of 1837. It is quite possible your grandfather bought the clock new in the 1830's.

J. E. C.

*Dear Mr. Coleman:*

*Through your column or articles, I have derived much help on clocks. I have learned the function of the parts very well. All that I know I have learned from your information and from practice. I am a watchmaker, but have lots of clocks coming in, and I have been able to take care of most of them.*

*At present I have a 400-day clock I have been unable to make run but a short time then it stops. When it came in it had a broken suspension spring. I replaced it with one of the same thickness and it would not run. I cleaned it, checking all working parts; then it ran for a short time, but only with ⅓ motion. I checked the pallet and escape wheel and found that it was not functioning as it should. There was no drop lock—it was striking the impulse face of the supposed-to-be stones.*

*The pallet does not have stones, the arms are curved and work as stones. There is no way to change them. There is a screw in the plate, and one pivot of the escape wheel works in it. The screw can be turned. I turned the screw to see if I could get any drop lock, and when I did it would not let off. If I set it so that it will pass both stones, it will have no drop lock and on the discharge side the stone will catch on the teeth of the escape wheel. On the receiving side, there will be plenty of drop but no lock.*

*It seems to me the escapement is set up off center. I would like to have your opinion as to what I might do to the clock. Do*

# Famous for *all* Time

Nye's famous oils safeguard the telling of time . . . even the smallest watch mechanisms get the finest lubrication with NYE'S BRACELET WATCH OIL. Non-corrosive resistant to temperature change these Porpoise Jaw Oil products STAY at the point of lubrication . . . insure extra protection and help timepieces give better performance.

NYE'S WATCH AND CLOCK OILS

WM. F. NYE, INC. • NEW BEDFORD, MASS. • ESTABLISHED 1844


*you know of any place I might send this clock and have it repaired, or get another pallet assembly for it? I am quite sure that if the supposed-to-be stones could be changed, the clock would work. Any information you can give will be highly appreciated.*

HUBERT OXENDINE
*Pembroke, North Carolina*

Dear Mr. Oxendine:

400-Day clocks never come with jeweled pallets, and you can't supply the correct suspension spring by simply measuring the old one. The off-center verge arbor bearing you mention is for the purpose of adjusting (changing) the center distance between it and the escape wheel. If, as indicated, the clock you have is the fixed pallet type, i. e., the verge is one piece and therefore pallets are not movable, and if it and the escape wheel have not been altered, proper depthing of escape to verge can easily take care of all the adjustment necessary.

Either you have fitted a suspension spring that is too strong or you have the fork set too low on the bridge. Quite possibly it may be some of both. Mr. Charles Terwilliger, Box 299, Bronxville, New York, publishes and sells the "Horolovar Suspension Spring Guide" (A.H.&J. Book Department, $2.00 plus 8 cents postage), which book gives all the correct Horolovar suspension springs for the various 400-day makes. Your next best bet is to "beat" the suspension spring to determine whether or not you have the strength intended by the maker—with the exception of a very few of the late miniature 400-day, all of them beat eight to the minute. Put in a spring you think the correct strength, leave off the fork, swing the pendulum through about a turn, allow it to swing for a minute or so and count the beats with a stop watch, or in view of a regulator with long sweep seconds hand. It if makes more than eight (even) beats in 60 seconds, it is too strong.

After you have the correct spring set on the fork—most repairmen have a tendency to set it too low—so that the escapement barely locks and unlocks within ¾ (270 degrees) of a turn of the pendulum. We've observed a number of workmen who jump to the conclusion that the escape wheel tooth is dropping onto the impulse face of the pallet simply because the escapement acts that way. Instead of allowing the pendulum to swing the verge, move it slowly but firmly with your finger and watch the tooth action through your loupe. Chances are you will discover that the tip of the tooth strikes the locking surface of the pallet and not the impulse face. Normally the locking is light, and while the escapement is dead-beat, the blow has a tendency to unlock it when the fork is set low. You can readily see that the nearer the fork is to the top chock, the shorter, and therefore stiffer than that portion of the suspension spring is—it must be stiff or strong enough to resist the drop and

therefore keep the action locked.

J. E. C.

*Dear Mr. Coleman:*

*In the January issue of A.H.&J. in your department Clockwise and Otherwise, there is a letter from Mrs. Anne Grund with reference to the Patti Clock. I have many back issues, but not the May, 1948, issue. When you write copy on vital points of the Patti clock, will you kindly send me a copy as I have two sizes of the Patti clock in my collection.*

WILSON Y. HOFFMAN
*372 Spruce Street*
*Pottstown, Pennsylvania*

Dear Mr. Hoffman:

The editorial office informs me that the back issues (1948) containing the Patti article are no longer available. Just as soon (a week or two) as I can have prints made from the negatives, I shall send you photos and typed copy of the text.

Your letter is most interesting because it was my thought that only one size Patti was ever manufactured and marketed. We saw in Clock Manor museum a miniature case (no movement) about one-fourth size and I believe it was said to be a salesman's sample or something to that effect. I very definitely recall photographing a cut and portion of catalog page (E. N. Welch), and that only one Patti was catalogued. I would especially appreciate a detailed description of your smallest. Is the case an exact duplicate of the large one? What kind of movement, etc.? If any of our readers have knowledge of more than one size of the Patti model, by all means send along that card.

J. E. C.

*Dear Mr. Coleman:*

*My father repairs old clocks and has been unable to find parts. Your name was given me and I would like to know if you have a catalog or pamphlet listing parts and prices?*

O. L. FRY
*521 North 39 West Avenue*
*Tulsa 15, Oklahoma*

Dear Mr. Fry:

We do not have the catalog (or catalogs) you request. In fact there is very, very little available in the line of old clock repair parts to be had. I suggest that you: 1. Contact your local material house. I believe it is Norvell Marcum Company at 223 East Third Street there in Tulsa; 2. Give your father a subscription to The American Horologist & Jeweler. Many suppliers of special services, including the making of obsolete clock parts, advertise therein. All the leading material supply houses also maintain regular advertisements.

The subscription rate is $3.00 per year, the address P. O. Box 7127, Capitol Hill Station, Denver 6, Colorado.

J. E. C.

*Dear Mr. Coleman:*

*I have in for repair a Seth Thomas weight clock, and the party who owns it would like the date it was made. The works has stamped on it "S. Thomas, Plymouth, Connecticut, U.S.A." at the hour and minute shaft, and the printed label in the clock reads, "Extra No. 1 brass clock manufactured expressly for W. H. Vantassel, Brockville C. W. Warranted good."*

*My customer would like to know what the "Brockville C. W." stands for. Then comes the instructions on care and running of the clock with an English crest between and ends up with the printed name "Francis & Loutrel, stationers and steam job printers, 45 Maiden Lane, N. Y." The weights, one on each side of the case, are attached to the power wheels by cord which runs from the power wheel to a pulley in the top of the case to the weights on the sides. It is an alarm and strike type, and the alarm bell is missing. If you have any data on this clock, you could perhaps tell me what type of bell I could substitute.*

ANDREW BEADELL
*Toledo 9, Ohio*

Dear Mr. Beadell:

The town in which the Seth Thomas factory (it has never moved) is located was renamed Thomaston, replacing its first name of Plymouth Hollow. I quote from a trade journal of November, 1899: "The name Plymouth Hollow was continued until after his (Seth Thomas) death which occurred in 1859. At this date it had become a large and flourishing village, and was named Thomaston in honor of him who was its real founder and for so long its animating spirit. The village was set

off as a new township, and named Thomaston by act of legislature in 1875."

Mr. Brooks Palmer in "The Book of American Clocks" says, "With change of name from Plymouth Hollow to Thomaston in 1866, clocks can be dated." We have endeavored to pinpoint the date of this change even to writing the town clerk of Thomaston (no reply), and to date haven't come up with anything more definite than the above.

We find no listing on W. H. Vantassel. In all probability he was a retail jeweler (merchant) buying Seth Thomas clocks, and pasting in his own labels. We believe the "Brockville" might be Brockville in Leeds County, Ontario, Canada, which is only about 250 miles from Thomaston. Would you care to try a letter to the Public Library there? Perhaps they can locate Mr. Vantassel in an old directory. At any rate, the striking gongs in these clocks were spiral wires.

J. E. C.

*Dear Mr. Coleman:*

*For some time now I have been wanting to drop you a line. First of all, your Clockwise & Otherwise is tops with good information and swell cooperation.*

*I just wrote a letter to Mr. F. R. Crawford, St. Paul 13, Minnesota, in regard to the letter you had from him about making a clock. I note quite a lot of interest in making clocks in your column, and all this is of special interest to me, as I have been working on a regulator clock movement in my spare time. Lately spare time has been nil, so the project is at a standstill; however, I still gather ideas.*

*The attachment for relieving hobbs on a lathe by Mr. Paul Blanchat of Wichita, Kansas, which you mention sounds interesting. Could you send me some dope on that? While I am writing, I would like to mention a few words about lathes. It seems to me a screw-cutting lathe is almost a necessity in clock repairing. It would be of so much more use than a watchmaker's lathe, as one can make almost anything on a good screw-cutting lathe. The cheapest I know of that is any good is the 9" South Bend. This would not cost much more than a watchmaker's lathe with slide rest and milling attachment. I have not checked the prices lately, but about $300.00 should buy the bare lathe, and another $300.00*

No. G. 809-17J. A. S. Mvt. R. G. P.—Steel Back Strapped—Special .....$10.75
Prices Do Not Include Postage
**Write for folder illustrating our latest specials in watches and attachments.**

**RESSEL WATCH COMPANY**
Importers & Distributors of Fine Watches & Attachments
87 NASSAU STREET, NEW YORK 38, N.Y.

**ROYAL DIAL REFINISHING**

**ROYAL RESULTS**
have been tested and used by watchmakers throughout the U. S.

**ROYAL EXPERIENCE**
of 30 years has proven its ability in satisfying customers year after year.

**ROYAL WORKMANSHIP**
is maintained and governed by the highest standards of dial refinishing.

**ROYAL REFINISHERS**
are trained to handle any refinishing problem expertly with complete dial service.

**ROYAL SERVICE**
is prompt and efficient, received in morning—returned by evening air mail.

***We Guarantee Satisfaction***

**ROYAL DIAL AND REFINISHING COMPANY**
53 SECOND AVE., BAY SHORE, L. I., N. Y.

**SEND A TRIAL ORDER TODAY**

Since 1877

**BOWMAN TECHNICAL SCHOOL**

**Courses in Watchmaking—Engraving—Jewelry Repairing**

A very fine new book of facts about B.T.S. and its work: **Your Future and Our School**, tells how you can benefit supremely by a B.T.S. course, and will be mailed you free. Write for it. B.T.S. Graduates easily pass any State Board examination, or the Certified **Master** Watchmaker tests of H. I. of A. **Highest** authorities say B.T.S. is the **best** school.

**You Can Begin Your Course at Any Time**

**Write for free book: Your Future and Our School—10**

**Bowman Technical School**

**Bowman Building, Lancaster, Pa.**

JOHN J. BOWMAN
Director

CHARLES EZRA BOWMAN
Registrar

Courses approved for Korean War Veterans

*would buy a fair assortment of attachments.*

*I can vouch for the accuracy on these lathes as I used to have one before I bought my present lathe which, is a 10" Sheldon. Altas makes a 6" lathe which isn't bad, but not as accurate as the South Bend. Anyone who has ever had a screw-cutting lathe would never be without one around the shop.*

*The Horological Journal for December, 1953, has a notice about a book on gears. Looks like a good write-up on this subject.*

OLE P. OLSON

*Route No. 1*
*Kalispell, Montana*

Dear Mr. Olson:

If all of us could suddenly complete all the projects, both contemplated and actually started within the next five days, the U.S.A. would certainly have a lot more machinery on hand, wouldn't it?

Mr. Crawford has just returned the little article that Mr. Blanchat send in, so I'm lending it to you. He (Mr. Crawford) thinks well of it, made a sketch and plans to make one. Will you please return it when you've finished?

See mention of a new book on small gears in this Otherwise. It should be of special interest to all like yourself interested in making cutters and gears. Speaking of lathes, do you have the little book put out by Atlas, "Manual of Lathe Operation"? It's from The Atlas Press Company, 1822 North Pitcher Street, Kalamazoo, Michigan. It's been quite a time, but I believe the price is $1.00; 238 pages of good information. There are some good pointers on making cutters and relieving them in Levin's "Practical Bench Work." (A.H.&J. Book Dept., 377 pages, $5.00.)

The column would especially appreciate photos and detailed description of your clock when it's finished.

J. E. C.

"Junior swallowed your watch and then drank a glass of water—it's sure a good thing it was waterproof."

*Edwin B. Burt*

**DIAL PAINTERS**

**SINCE 1923**

**CLOCK DIALS REFINISHED**
**HAND DIAL PAINTING**

**21 Loring Rd., P.O. Box 65**
**Auburndale 66, Mass.**

**Send for Illustrated Price List**

# THE WATCH REPAIRMAN AND THE OSCILLOSCOPE

By Carl H. Anderson

WE FULLY realize that most watch repairmen are not chemical engineers and therefore are not acquainted with many of the chemicals used in the making of watch cleaning and rinse solutions. For this reason we give herewith a few of the pertinent technical and chemical points of the various items used in these solutions. Where caution is needed in handling any certain chemical we have included this item along with our other information.

**Oleic Acid**—Obtained by the hydrolysis of various animal and vegetable fats and oils. Pure oleic acid is a colorless or nearly so, odorless liquid. If heated to 176° to 212° F., at atmospheric pressure it decomposes. On exposure to air, especially when not pure, it oxidizes and acquires a yellow to brown color and rancid odor much the same as an old cyanide solution does. It is insoluble in water; but is readily soluble in alcohols, benzene, chloroform, ether, fixed and volatile oils. *Keep well closed and protected from light,* preferably in colored glass jugs and stored in a cool, dark place.

Several grades of the acid are available which vary in color from a pale yellow to a reddish brown. It becomes turbid at 16° to 46° F., depending upon the amount of stearic and other saturated acids it contains. The acid usually sold contains from 7% to 12% saturated acids such as stearic, palmic and sometimes some lineolic and other unsaturated acids.

It is used extensively in the preparation of Turkey Red Oil, soft soaps, and other oleates and also in polishing compounds. It has other uses which do not concern horology.

It is regularly available in U.S.P., and technical grades. We definitely do not recommend the use of other than the U.S.P. grade which is the purest and contains no other acids which are harmful when used in cleaning solutions for watches, clocks, jewelry and the like.

**Acetone** (Dimethyl Ketone)—Is obtained by the dry distillation of calcium acetate; by passing acetic acid vapor over heated barium oxide, or by fermentation of carbohydrates. The acetone usually obtainable from wholesale houses ranges from 99.5% to 99.9% pure, the remainder being chiefly water. We definitely do not recommend the purchase of this item from local retail druggists as it is possible to sell you too many substitutes which have a similar odor but are definitely not useable in horology.

Acetone is a *highly flammable liquid.* It must be handled with reasonable care. Keep your lighted cigarettes away from the gas formed by evaporation. It has a very characteristic odor, is pungent and has a sweetish taste. It is miscible with water, alcohol, chloroform, ether and most oils. *Positively do not leave container uncorked and keep it away from fire!!!*

It is used as a solvent for fats, oils, waxes, resins, rubber, plastics, lacquers, varnishes, rubber cements, etc. It is also used in the manufacture of chloroform, iodoform, bromoform, explosives, aeroplane dopes, rayon, photographic films, isoprene; for the storing of acetylene gas (it takes up about 24 times its volume of the gas). It is also used in paint and varnish removers.

It is available in reagent, N. F., and technical grades. For use in horology we recommend the purest grade possible.

Avoid prolonged inhalation of the vapors or gas from evaporation as it is toxic. Inhalation produces bronchial irritation

Mr. Anderson will be glad to answer any question pertaining to the Oscilloscope. Queries should be sent to him in care of the American Horologist & Jeweler, with a stamped return envelope enclosed.

and stupor; serious poisoning is rare. It can produce dyspnea; progressive falling of body temperature as well as the lessening of the respiratory and heart rate. The maximum allowable concentration in the human body is 500 parts per million.

**Ammonia Water, Stronger**—(Also known as Ammonium Hydroxide, aqua ammonia and "Spirit of Hartshorn.") Stronger ammonia is a solution of 28% to 29% of $NH_3$ in water. Do not confuse with the common household ammonia which is usually only from 5% to 10%.

It is a colorless liquid and has an intense, pungent, suffocating odor, an acrid taste and has strong alkaline reaction. It dissolves copper and zinc. Fumes are formed when ammonia water is brought near volatile acids. *Keep in cool place, protected from light, in strong glass jugs with plastic or rubber stoppered bottles, not completely filled.* There is great danger in mixing ammonia with $H_2SO_4$ or other strong mineral acids, as they instantly become boiling hot.

It is generally used as a detergent and for removing stains and bleaching. It has a wide variety of uses not connected with horology. It is usually available in reagent, U.S.P., and technical grades. We recommend the use of only the U.S.P. grade.

It is toxic and ingestion may lead to inflammation and sloughing followed by constrictive scarring. Death may result from shock. *Caution:* It is irritating to mucous membranes. The gas formed by evaporation is so pungent and intense with such a suffocating odor that humans can not stay anywhere the odor exists. We hardly feel we need say more about breathing the ammonia gas as everyone who has ever done so will avoid doing it the next time.

**Hydrogen Peroxide**—(Also known as hydrogen dioxide.) It is made from barium peroxide and diluted phosphoric acid or electrolytically through ammonium persulfate. It is usually marketed as a solution in water in concentrations from 3% to 30% by weight.

Solutions of hydrogen peroxide gradually deteriorate and are usually stabilized by the addition of acetanilide or similar organic materials. Agitation or contact with rough surfaces, metals or many other substances accelerates decomposition. It is rapidly decomposed by alkalis, finely divided metals; the presence of mineral acid renders it more stable.

Anhydrous hydrogen peroxide is a colorless, rather unstable liquid; has a bitter taste and is caustic to the skin. May decompose violently if traces of impurities are present. Miscible with water; soluble in ether; insoluble in petroleum ether; decomposed by many organic solvents.

**Hydrogen Peroxide 3% Solution**—Is a colorless and slightly acid liquid. Foams in the mouth. *Keep protected from light and in a cool place.* It is incompatible with alkalis, ammonia and their carbonates, albumin, balsam peru, phenol, charcoal, chlorides, alkali citrates; ferrous, mercurous or gold salts; hypophosphites, iodides, lime water, permanganates, sulfites, tinctures and organic matter in general.

It has many uses, amongst them being the bleaching of hair, silk, straw, ivory, flour, bone, gelatins and textile fabrics. It is used with NaOH for cleaning metal surfaces, for gilding, silvering, etc. It is available in U.S.P. and technical grades.

**Hydrogen Peroxide 30% Solution**—Is a clear, colorless liquid. This peroxide solution is replacing the 3% solution for industrial uses, being diluted to the required strength immediately before use.

*Caution! It is a strong oxidant.* Avoid contact with skin and eyes—wear rubber gloves and goggles. Avoid contact with combustible materials. Drying of the concentrated product on clothing or other combustible materials may cause fire. In case of contact, immediately flush with plenty of water for at least 15 minutes; for eyes, get medical attention immediately. Avoid contamination from any source, including metals, dust, etc. Such contamination may cause rapid decomposition, generation of large quantities of oxygen gas and high pressures.

Store in original closed container. Be sure that the container vent is working satisfactorily. Do not add any other product to container. When empty, rinse thoroughly with clean water.

The hydrogen peroxide 30% solution is

not suitable for use in horology. The 3% solution is the one to use in preparing a foaming cleaning solution.

**Gasoline**—(Also known in Europe as Petrol.) A mixture of $C_4$ to $C_{12}$ hydrocarbons. Natural gasoline is obtained by the fractional distillation of petroleum and contains mostly saturated hydrocarbons; but the ordinary commercial grades of motor gasoline contain paraffins, olefins, napthenes and aromatics, all in substantial concentrations. Motor gasolines are made chiefly by cracking processes, in which the heavier petroleum fractions are converted into the more volatile fractions by thermal or catalytic decomposition.

Most gasolines sold in the U. S. A. contain a minor proportion of tetraethyl-lead which is added in concentrations not exceeding 3 milliliters per gallon of motor gasoline to prevent "knock" in engines in which the gasoline is used as a fuel. Knock is the audible manifestation of an excessive rate of pressure rise when the gasoline vapor is ignited under compression in an engine.

Commercial grades of tetraethyl-lead or ethyl fluid typically contain about 63% tetraethyl-lead and about 35% ethylene dichloride or dibromide, which aids in evacuating the products of combustion of the lead compound from engines. In addition, the fluid contains a red or a blue dye. All leaded gasolines are dyed for recognition and *should be used only as motor fuel, never on watches.*

Gasoline is a highly flammable, mobile liquid with characteristic odor. It is insoluble in water; freely soluble in absolute alcohol, ether, chloroform, benzene. Dissolves fats, oils, natural resins.

It is toxic. Ingestion produces inebriation, vomiting, vertigo, fever, drowsiness, confusion, syanosis. Aspiration produces bronchitis or pneumoia. Inhalation produces intense burning in throat and lungs, possibly bronchial pneumonia.

Most so-called white gasolines contain liberal quantities of paraffins which makes it highly unsuitable for horological use.

**Ether**—(Also known as ethyl or diethyl oxide; ethyl or sulfuric ether; ethoxyethane; diethyl ether.) It is made by heating alcohol with $H_2SO_4$ at about 266° F.

It is a colorless, clear, very mobile, *very*


SEND US
YOUR OLD GOLD

**There IS a Reason!**

why thousands of jewelers from all over the country ship their scrap with confidence to

**Hoover & Strong**

*Send Us Your Next Shipment . . . the Amount of the Check Will Tell the Story!*

**PROMPT SERVICE**
**ACCURATE RETURNS**
**HIGHEST RATES**

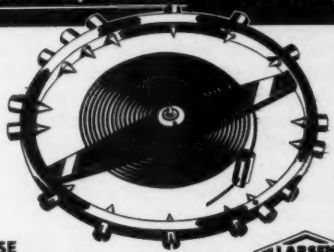
Our Exacting Refining Methods Insure Complete Recovery of Every Last Grain of
**GOLD - SILVER - PLATINUM - PALLADIUM**

*WE REFINE OLD GOLD, FILINGS, SWEEPS, FILLED SCRAP, SILVER . . . SCRAP IN ANY FORM.*

**HOOVER & STRONG, Inc.**
*Golden Rule Refiners*
119 W. Tupper St., Buffalo 1, N. Y.



Your reputation demands it!



USE
Quality Balances Complete by
GUARANTEED
*The Ultimate in Precision and Expert Assembly*

**BALANCE WHEEL**
Highly polished, permanent lustre
**SCREWS**
Slotted, precision set for perfect poise
**HAIRSPRING**
Accurately timed, properly proportioned
**BALANCE STAFF**
Highest quality, pivots hand polished
**ROLLER TABLE**
Genuine factory precision

LARSEN

ASK YOUR JOBBER
FOR ALL POPULAR MODELS-FLAT AND BREGUET

LARSEN IMPORTING COMPANY, NEW YORK

*volatile and flammable liquid;* characteristic odor, burning taste; hygroscopic (absorbs up to 1.2% weight for weight of water). Ether is slowly oxidized by air, forming ethyl peroxide. Sunlight promotes peroxidation. (Pure ether peroxide explodes when heated above 212° F.) One milliliter dissolves in 12.5 milliliters of water; miscible with alcohol, benzene, chloroform, petroleum ether and oils. Solubility in water is increased by HCl, but decreased by alkali chlorides, nitrates and sulfates.

It is used as a solvent for waxes, fats, oils, perfumes, gums and many other industrial uses. It is available in reagent, U. S. P. and technical grades. It is used medicinally as an inhalation anesthetic. Maximum allowable concentration in the human body is 400 parts per million.

*Caution:* Prolonged inhalation may cause renal disease, acute respiratory disease, severe dyspnea or uncontrolled diabetes.

**Carbon Disulfide** — (Also known as carbon bisulfide.) It is made by heating charcoal and sulfur vapor.

It is a colorless or faintly yellow, clear, *very flammable liquid. Poisonous!* The purest preparations have a somewhat pleasing and ethereal odor, while the usual commercial and reagent grades are foul smelling, because of the presence of odoriferous sulfur compounds. One milliliter dissolves in 530 milliliters of water, miscible with anhydrous alcohol, chloroform and ether. *Keep in tightly closed containers, in a cool place and away from flames or fires.*

With alcohol KOH it forms potassium xanthate, and when the solution is neutralized with acetic acid and $CuSO_4$ solution added, a yellow precipitate of copper xanthate is formed.

It is used as a solvent for fats, oils, rubber, waxes, resins and many other industrial uses.

It is toxic and poisoning usually occurs from inhalation. Approximately 480 parts per million for one hour is the maximum concentration tolerated without serious disturbance. Daily exposure must not exceed 20 parts per million. Acute: Euporia, restlessness, unconsciousness, terminal convulsions. Chronic: Marked physic disturbances ranging from extreme irritability to mania with hallucinations, marked tremors, auditory and visual disturbances.

It is available in reagent and technical grades.

**Carbon Tetrachloride**—(Also known as tetrachloromethane; perchloromethane; benzinoform.) It is obtained from carbon disulfide and chlorine in the presence of a catalyst such as $SbCl_5$.

It is a colorless, clear, nonflammable, heavy liquid having a characteristic odor. It is a very heavy liquid, weighing 13.3 pounds per gallon (water weighs 8.3 pounds per gallon).

One milliliter dissolves in 2,000 milliliters of water; miscible with alcohol, benzine, chloroform, ether, carbon disulfide, petroleum ether and oils.

It is used as a fire extinguisher, for absolute odorless dry cleaning; rendering benzin nonflammable; as a solvent for oils, fats, lacquers, varnishes, rubber waxes, resins, insecticide, etc. It is available in reagent, N. F., and technical grades.

*Caution:* May form phosgene when used to put out electrical fires.

It is toxic. Acute: excitement, possibly convulsions, depression; chronic, hepatic damage, dermatitis, bronchitis and conjunctivitis. Symptoms produced by ingestion or inhalation. Some skin absorption occurs. The maximum allowable concentration in the human body is 25 parts per million.

**Benzene**—(Also known as benzol and cyclohexatriene.) It was discovered by Faraday in compressed oil gas in 1825. Today it is obtained in the coking of coal and in the production of illuminating gas from coal.

It is a clear, colorless, *highly flammable* liquid, has a characteristic odor and is *poisonous!* It is soluble in 1430 parts water; miscible with alcohol, chloroform, ether, carbon disulfide, carbon tetrachloride, glacial acetic acid, acetone and oils. *Keep in well closed containers* (glass jugs being best) *in a cool place and away from fire!!!*

It is used in the manufacture of medicinal chemicals, dyes and many other organic compounds; artificial leather, linoleum, oil cloth, airplane dopes, varnishes, lacquers and also as a solvent for waxes, resins, oils, etc. The grades available are

reagent and technical.

It is toxic and harmful amounts may be absorbed through the skin by prolonged contact. Prolonged inhalation of 100 parts per million causes toxic symptoms. Acute: (from ingestion or inhalation) causes restlessness, excitement and depression. Death follows from respiratory failure. Chronic: All symptoms and signs of anemia.

(Note the spelling of benzene. Chemical text books do not list such a word as benzine.)

**Trichlorethylene** — (Also known as trichlorethene; ethinyl trichloride; triclene; trilene; triline; tri; threthylen; trethylene; westrosol; chlorylene; gemalgene; germalgene.) Usually prepared from symetrical tetrachloroethane by elimination of HCl (by boiling with lime); by passing tetrachlorethane vapor over calcium chloride catalyst at 572° F.; without catalyst at 450° to 470° C.

This is a nonflammable, mobile liquid, having a characteristic odor somewhat resembling that of chloroform. It is practically insoluble in water; miscible with ether, alcohol and chloroform. Dissolves most fixed and volatile oils. It slowly decomposes with the formation of HCl by light in the presence of moisture. For medicinal purposes it contains some ammonium carbonate (note more than 20 milligrams in 100 milliliters) as a stabilizer. The industrial grades may contain other stabilizers such as triethanolamine stearate and cresol.

*Caution: Use with adequate ventilation.* Avoid prolonged exposure to excessive heat. It is best to store it in a cool, dark place.

It is used as a solvent for fats, waxes, resins, oils, rubber, paints and varnishes. Also as a solvent for cellulose esters and ethers. Used for solvent extraction in many industries, in degreasing and dry cleaning. It is available in U. S. P., and technical grades.

**Petroleum Benzin**—(Also known as petroleum ether; benzin or naphtha.) It is one of the low boiling fractions of petroleum. It consists chiefly of hydrocarbons of the methane series—principally pentanes and hexanes.

It is a clear, colorless, nonfluorescent, *highly flammable,* volatile liquid having a characteristic odor. It does not solidify


FREE
Swiss Material Catalog
Movement Ligne Gauge
Order Book & Envelopes
WATCHMAKERS! JEWELERS!
Buy with CONFIDENCE from
POLTOCK
The COMPLETE Supply House
Genuine SWISS AND AMERICAN MATERIALS
HARD-TO-GET WATCH PARTS
Extra Services:
Hairspring Vibrating
Straps Sewed Special
Train Wheels Cut Special
Clock Dials Refinished
Electro Seals Fitted
Dial Refinishing
• Crystal Fitting
• Jewel Fitting
• Special Staffs Cut
• Cases and Dials
JOHN A. POLTOCK & CO.
15 MAIDEN LANE • NEW YORK 38

Zenith "LEADER"
The BUDGET-PRICED — BETTER
Watch Cleaning Machine

Compare! Powerful Overhead Motor 3 Square Jars Drying Chamber!
Only $57.95
Order from your Material Jobber
Write for Complete Catalog Sheet of ZENITH Superior PRODUCTS
Zenith MFG. & CHEMICAL CORP.
52 BEEKMAN STREET, NEW YORK 38

in the cold; the vapors when mixed with air explode if ignited. It is insoluble in water; miscible with absolute alcohol, benzene, chloroform, ether, carbon disulfide, carbon tetrachloride and oils except castor oil. *Keep tightly closed in a cool place and away from fire!*

It is used as a solvent for oils, fats and waxes; as a detergent; fuel, in paints and varnishes; insecticide and in photography. It is available in reagent, U. S. P., and technical grades.

It is toxic and inhalation of vapors may cause headache, blurred vision, mental confusion, inability to do fine work, dizziness, nausea, abdominal pain, and in severe cases loss of consciousness. Chronic exposure may cause apathy, mental confusion, forgetfulness, muscular weakness and tremors. Definite intoxication produced by 5 minutes exposure to 7,000 parts per million.

**Ligroin**—(Also known as V. M. & P. naphtha; varnish makers' and painters' naphtha; refined solvent naphtha; solvent naphtha; benzoline, canadol.) It is a petroleum fraction of the same nature as described for petroleum benzin, but of higher density, higher boiling range and higher flash point.

Refined solvent naphtha meeting the American Society for Testing Materials specifications is a mobile, *flammable* liquid. It has the same uses as petroleum benzin. It is commercially available.

**Soap**—Any salt of a fatty acid, usually made by saponification of a vegetable oil with caustic soda. Hard soap consists largely of sodium oleate (low titer) or of sodium palmitate or stearate (high titer); soft soap of potassium and sodium salts of cocoanut and/or palm oils; fatty acids. Rosin acid salts have detergent properties and are often incorporated in laundry soap. Shaving soaps contain glycerol and gum to prevent rapid drying. Medicated soaps contain antiseptics such as phenols or mercury salts. Soaps also may be prepared from the fatty acid and amine, e. g., triethanolamine. Non-alkali metal salts of the fatty acids are water-insoluble and as such have certain uses.

Hard soap (olive oil castile) is a white or yellowish-white powder or bar, soluble in water or alcohol. The aqueous solution is alkaline due to hydrolysis; the alcohol solution is only slightly alkaline. Soft soaps (green soap) is a yellowish-white to brownish-yellow (or green) soft mass, more soluble than hard soap.

Hard soaps have many uses, the greatest being as a detergent, although they are also used as a vehicle for liniments; as an ingredient of pills containing resinous drugs like aloe, etc. Soft soap is used almost entirely as a detergent. Insoluble soaps are used as fungicides, disinfectants, in face powders, ointments, waxes and polishes, greases and surface coatings.

Since all of these chemicals can be or are used in the preparation of watch cleaning or rinse solutions, we thought it advisable to acquaint you with some of their chemical properties. You be the judge of which ones you wish to use. There are many other chemicals which can be used as a cleaner or rinse solution such as butyl cellosolve which is used extensively in the dry cleaning industry. In fact many of the watch rinse solutions prepared by the major oil companies are the same thing they sell to the dry cleaning industry for use on clothes. We sincerely hope that from all this mass of technical information that you have learned some things that will be of worthwhile value to you.

• • •

WE ARE deeply indebted to Mr. James O. Knudtson of Roseburg, Oregon, for lending us a copy of the little booklet which Patek-Phillipe of Geneva, Switzerland, sent along with each one of their new 30-jewel automatic wrist watches. This booklet gives in plain English (that the purchaser can understand), without technical terms, some of the things the owner should know about his new watch. It comprises 32 pages and has very beautiful and expertly executed color illustrations. The watch does not have a regulator, but has eccentric discs (with slots which make them look much like screws) mounted on the top of the balance wheel which are turned either in or out to make the watch gain or lose. Another feature is that the oscillating weight is made of 18-karat gold which makes it weigh more than when some base metal is used.

The watch is adjusted to heat, cold, five positions and isochronism. It also has one of the new unbreakable mainsprings. It has a very unique setting mechanism in that the intermediate setting wheel is fitted on a sliding lever, similar to the clutch lever. When the stem is in the winding position, the sliding lever holds the intermediate setting wheel away from the minute wheel so that they are not in mesh as is the case in the usual watch. When you pull out the stem to set the watch, the clutch slides down in the usual manner, and the sliding arm slides in to mesh the teeth of the intermediate setting wheel into both the teeth of the minute wheel and the contrate teeth of the clutch. You are thereby enabled to set the watch in the usual manner.

Of course the thing that impressed us most was the space devoted to their use of the oscilloscope. Near the center of the book, on the left hand page is a beautiful natural color illustration of the screen of the cathode ray tube showing the trace of the escapement action. On the right hand page is printed the following:

"Patek-Phillipe is probably the only factory in the world to have a system of control whereby a final record can be made showing the beat of the vital escapement in the finished watch. This control is similar to a doctor's electrocardiogram.

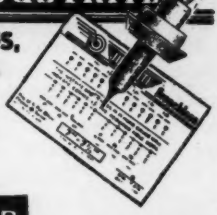
"This picture shows the oscillogram of the noise produced by that escapement. It indicates the operation of the three principal parts: the smallest represents the impact point of the roller jewel and the pallet-fork; the second one showing the beginning of the impulse; and the largest one indicating the impact point between the escape wheel and pallet jewels."

No doubt all our readers realize the outstanding position of Patek-Phillipe. We feel that whenever a manufacturer of such a high reputation includes a colored illustration and such a statement in a booklet to be given to the watch owner when he purchases the watch that it conclusively proves the use of the oscilloscope is absolutely necessary to know the exact condition of a watch. We know there are some who claim to be watchmakers who have been "pooh-poohing" the use of the oscilloscope and in our opinion this statement by Patek-Phillipe, as well as those by Rolex and others, should make them feel rather "silly." As soon as possible we will publish a movie film which shows the oscillo-


JUSTRITE

BALANCE STAFFS, WATCH HANDS

And other JUSTRITE Products are the finest quality made. Ask your jobber for JUSTRITE by name.



NU-TEMPER THE QUALITY MAINSPRING

for American and Swiss watches, made of the finest steel, accurately gauged, evenly tempered.

NU-TEMPER FEATURES:

- Denison and metric gauges on the envelopes.
- Tongue-ends and undercut end-tips insure proper grip on barrel.
- Individually packed — moisture proof.

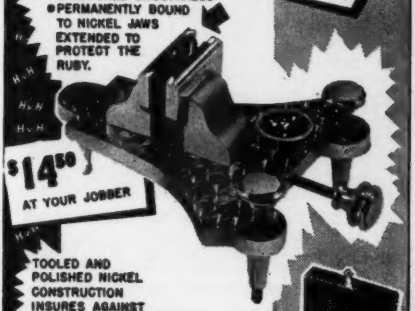
If your jobber cannot supply NU-TEMPER AND JUSTRITE products, write us for the name of your nearest distributor.

GLARDEN IMPORTING CO.
SOLE DISTRIBUTOR
116 Nassau St. New York 38, N. Y.

H.v.H. POISING TOOL

"A TOOL YOU'LL BE PROUD TO OWN"

RED RUBY JAWS...
- PRECISION-GROUND FOR UNMATCHED SMOOTHNESS
- PERMANENTLY BOUND TO NICKEL JAWS EXTENDED TO PROTECT THE RUBY.



$14.50 AT YOUR JOBBER

TOOLED AND POLISHED NICKEL CONSTRUCTION INSURES AGAINST BREAKING OR CRACKING.

INDIVIDUALLY PACKAGED IN A HANDSOME VELVETEEN-LINED LEATHERETTE CASE TO PROTECT THE INSTRUMENT FROM DUST AND ROUGH HANDLING.

WRITE FOR BOOKLET SHOWING
POISING TOOLS BALANCE SCREW HOLDERS
CALIPERS CANNON PINION REMOVERS
BOLEY TYPE GAUGE

*If Your Jobber Cannot Supply You, Order from*

H. v. H. Tool & Instrument Co.
150 LAFAYETTE STREET NEW YORK 13, N. Y.

grams of a complete revolution of an escape wheel which was sent to us by Mr. E. Borer, chief technician of the Rolex factory in Bienne, Switzerland. This oscillographic movie film shows the trace of each tooth as it passes over both the receiving and discharging pallet stones.

You can be absolutely certain of one thing, the oscilloscope will clearly and instantly show you the mechanical faults in a watch that positively cannot be found by any other method. These are the very watches which cause some of your hardest headache come-backs because the fault may occur in as short a time as one millisecond, or even a fraction of a millisecond, or it may be so microscopically small that it cannot be seen with the most powerful loupe ever made. Yet that same fault will show up on the oscilloscope screen as large as your thumb. We have no oscilloscopes to sell you, but if you could sit down beside us at the bench for just one day and watch us work, we are positive you would leave with your mind definitely made up to own a good oscilloscope in the shortest possible time.

Our immediately preceding articles on oil failure in watches has caused more comment pro and con than anything that has appeared in jewelry or horological magazines in the past fifty or so years. We are receiving mail from all over the world. Absolutely every watch repairman has praised our articles, for which we are truly thankful.

We have received a letter from England enclosing the instruction sheet which accompanies one of the British makes of watch cleaning machines. This British manufacturer recommends the use of toluol as a rinse solution. We have never used this chemical and therefore are unable to give you any information as to how satisfactory it is for use on watches. All we can give you is the following:

**Toluene.** (Also known as toluol, methybenzene, phenylmethane.) Obtained mainly from tar oil.

Flammable, refractive liquid; benzene-like odor, very slightly soluble in water; miscible with alcohol, chloroform, ether, acetone, glacial acetic acid, carbon disulfide.

It is used chiefly in the manufacture of benzoic acid, benzaldehyde, explosives, dyes and many other organic compounds; also as a solvent in the extraction of various principles from plants.

It is available in technical and reagent grades.

We would be very much pleased to hear from any of our headers who have used toluene. We would like to know their experience, whether or not it appeared to have any after effects on the oil, the finish of the metal parts of the watch, and anything else, either good or bad. From the foregoing chemical description, we are inclined to believe it would be satisfactory for use as a rinse if one does not consider the flammability. We have no information on its toxicity and since this point is not mentioned in the source we used for our information, it probably is not harmful to humans.

Did you ever take the cap off your can of rinse solution and smell the contents? Ever pour some of it out on top of your bench and try to set it afire? Did you ever believe you detected an odor of kerosene? We believe one of the commercially available rinses does contain kerosene, and since this item was unintentionally left out of our previous articles, we give you the following information:

**Kerosene.** A mixture of petroleum hydrocarbons, chiefly of the methane series having from 10 to 16 carbon atoms per molecule. It constitutes the fifth fraction in the distillation of petroleum (after the petroleum ethers and before the oils). A typical analysis of the kerosene fraction from mid-continent crude oil includes N-dodecane, three alkyl deriviates of benzene, naphthalene, 1- and 2-methyl, 5-, 6-, 7-, 8-tetrahydronaphthalene. It is pale yellow or water-white in color; mobile, oily liquid. Characteristic, not all together disagreeable odor, insoluble in water. Miscible with other petroleum solvents.

A water-white *deodorized* form of kerosene is marketed under the trade name of Deobase. Kerosene is deodorized and decolorized by washing with (fuming) sulfuric acid, followed by sodium plumbite solution and sulfur (doctor sweetening).

It is used normally in kerosene lamps,

flares and stoves; as a degreaser and cleaner in certain mechanical operations; in insecticides.

Toxicity: Causes local irritation, drowsiness, collapse, muscle twitching and coma. May cause damage to the heart, liver or kidneys.

If you are not allergic to kerosene, we suggest you very carefully "sniff" your rinse solution. Sometimes it is difficult to determine a kerosene odor due to the fact that Deobase (deodorized kerosene) could have been used. In cheaper grades of kerosene it could be possible that it might contain minute quantities of sulfuric acid and sulfur. Would you use either of these in cleaning your watches?

In many sections of the U. S., kerosene is incorrectly called "coal oil." Coal oil is actually petroleum. Petroleum is also known as crude mineral oil; rock or coal oil; and seneca oil.

If you will rub kerosene between your thumb and finger you will notice it is quite oily. We have used the rinse solution which we suspect of containing kerosene and have found that it leaves a film and does not completely evaporate in the heated dryer of the watch cleaning machine. We have also tested for an oily film and have found that a synthetic watch oil which normally has a very high contact angle (therefore does not spread), does not have a high contact angle and does spread very rapidly on jewel and metal surfaces that have been rinsed in this particular solution. In fact, in our own experience we have had a much greater percentage of oil failure come-backs from this particular rinse solution than we have had from any other. We do not believe that kerosene (no matter what name you give it) should be used in any watch rinse solution. We may be wrong on this, but do not believe we are. We are open to conviction. What has been your experience? Please write us.

• • •

Here is a bit of news that may interest many of our readers. Within the past few months two new makes of watch timing machines have appeared on the market. If we remember correctly, one sells for $199.95, and the other make is being marketed in two forms, one selling for $290.00 and the other for $375.00. We have not seen or used either of them, so would ap-


fulcrum oils

SPRING CARE

Timepiece service satisfaction is best insured when Fulcrum oil is used. In any season and for every moving part, Fulcrum oils are light enough to flow easily yet heavy enough to stay where put. Your jobber will supply you —Get Fulcrum.

ESTABLISHED 1912

fulcrum oil COMPANY

FRANKLIN, PENNA.

NEWALL ASSORTMENTS

THE BEST

CROWNS
STAFFS STEMS
JEWELS

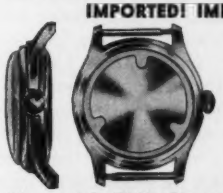
Order Through Your Jobber Now!

THE NEWALL MFG. CO.

CHICAGO 2 ILLINOIS

Water Resistant Cases

IMPORTED! IMPRESSIVE!



10½L, 11½L
ALL CALIBERS

$1.25 Each, in Doz. Lots Attractive Discounts on Larger Quantities

Precision finished, nickel chrome with S/S back, unbreakable crystal. Write for money-saving prices on cases for automatic and nurses' watches. Available also in all S/S, and G/F top with S/S back.

Service & Material Dept.

WAKMANN WATCH CO., INC.

15 West 47th St., New York 36, N. Y.

preciate hearing from readers who have bought and are using either of them.

We have received a very large response to our mention of the constructional faults in new watches. Everyone has asked that we identify the makes and models. To all of them we have replied in substance: "We have many friends among the wholesalers, importers and manufacturers of watches and would not wish to incur the ill will of any one of them, therefore we cannot give specific information as to makes and models." We do believe, however, that the man at the bench has enough troubles besetting him without having to spend hours on new watches to satisfy the purchaser that should have been right in the first place. We believe this information should be published, but *who* is to assume the responsibility?

For example, there is an automatic model in which the lower intermediate winding wheel bearing wears out egg-shape in a very few months. We have had at least a hundred of them within the past year and a half. What we have done is to "upright" the lower hole and friction in a train jewel. We have not had a single comeback as yet from this operation. One concern sold thousands of these watches and when you return one to them, they refuse to do anything about it. This has very materially affected the sale of their other line of watches, which incidentally happens to be a good line. We personally know many retail jewelers who have entirely discontinued doing business with this concern. In fairness, however, we should say that the newer ones that have been coming through the past few months have corrected this fault. They have fitted hardened steel bushings in both the upper and lower automatic winding plates. Our experience with such bearings in other automatics has been satisfactory and we believe these hardened bearings will last the life of the watch.

Then "scuttlebutt" has it that one concern had over 80,000 automatics returned to them within the first 90 days they were on the market. We personally had quite a few of this particular watch. Mostly the trouble was one of the pinions broke off the wheel of one of the automatic winding wheels. To our knowledge this company has replaced free of charge with a new movement every one of the old ones that was returned to them. This is an excusable fault because they bought these watches with their name put on the dial and plates; therefore they should not be held responsible for any error of the concern which actually made the movement. This happened to be a very reputable company, so the only damage done was the inconvenience to the customer being without a watch while the old one was sent in for exchange. We wish there were more companies who were as eminently fair with the retail customer and the trade.

● ● ●

There is a watch in which there was considerable difficulty with the detent not holding the stem in place. Owners were continually losing their stems and crowns. This fault has been corrected in later models which have been out for some time. There are quite a few other constructional faults in other watches which we will mention from time to time in future articles.

Quite often we are a little muddled in our mind as to what to write about. We know the things that interest us and which cause us trouble and headaches. We feel we are justified in believing others have the same troubles, so for that reason we have already written about some of these items.

Let us take for example barometric pressure and humidity. Do you believe these things affect the running of a watch, either an expensive one or a cheap one? They certainly do. How much? Anywhere from zero to four or five seconds in 24 hours. Should we write an article about it?

You work on a watch to bring it to an acceptable position rate only to have the customer continue to come in each week with a worse variation in rate than your timing machine chart shows. You check the watch again on your timing machine and it does not show any such rate as it does when carried. Do you know the cause? Just which one of these or a combination of two or more of them caused the trouble: Recovery rate, mean daily rate, isochronous rate, position rate, static poise rate, dynamic poise rate, change in barometric pressure, change in relatively hu-

midity percentage, temperature rate, resuming rate, the variation between mean daily rate and the rate in any one position, etc., etc., ad infinitum.

Do you know what is causing the error? Do you know if it can be corrected? Do you know what to do to correct the rate? Don't kid yourself that anyone of these things isn't important. Also remember that when you take the rate on your timing machine, you have *only the instantaneous static position rate, which in far too many cases doesn't mean a thing.* It is the combination of these various things which determines exactly what kind of time the watch keeps for your customer.

It all reduces itself to just one thing: Do you really and truly want to be a better workman? Do you want to turn out better work and thereby have better satisfied customers? Don't forget that a walking, talking advertisement is the very best one you can possibly have. Sure, you have many customers who tell you their watch runs better than it ever did before, but do you know how much better still it would run if you had the know-how and put in possibly three to five minutes more work on the watch? If you adjust your watches to six positions, try this for a while: Discontinue using pendant up, pendant down, pendant right and pendant left. In their stead use for your vertical positions: Balance up (over the lever), balance down (under the lever), lever horizontal receiving pallet stone up and lever horizontal discharging pallet stone up. Try it out for a month and see how much better your watches keep time. Then we will tell you what you did and why the watch kept better time.

Another thing—ever notice that every new watch comes to you with the regulator exactly on the center? Yes, the watch did keep time within the factory established tolerances with the regulator exactly on the center while it was in the factory. Will the watch do it now? It is a hundred to one that it won't. Do you know what happened? Do you know all the little things (call them "tricks" if you like) that the factory adjuster used to bring the watch to time with the regulator exactly on the center? Rough handling, shipping, improper handling in repairing and several other things could have completely nullified all of the things the factory adjuster


**Save on Used Movements**

For all purposes . . . practice or replacement.
Practice movements for students.

| SWISS | BULOVAS & GRUENS | WALTHAM & ELGIN POCKET WATCH MOVEMENTS |
|---|---|---|
| All Sizes, 6x8-10½L., 8x9, etc. 7-Jwl. $3.75 17-Jwl. $5.00 | 15-Jwl. $7.00 17-Jwl. $8.00 | (12 & 16 size) 7 Jwl. $4.00 15-Jwl. $6.00 17-Jwl. $8.00 21-Jwl. $15.00 |
| 10 Ass't. Used Swiss Watches 7, 15, 17 Jewels need cleaning only ..... $20.00 | WALTHAM & ELGIN 16/0, 21/0, 18/0, 8/0, etc. 7-Jwl. $4.50 15-Jwl. $6.50 17-Jwl. $8.50 | (18 size) 7-Jwl. $2.50 15-Jwl. $3.50 17-Jwl. $4.50 21-Jwl. $11.00 |
| 5 American Pocket Watches need cleaning only ..... $15.00 | | |

10 Ass't American Practice Movements..... $10
20 Ass't Swiss Practice Movements..... $10
NEW 1954 WHOLESALE CATALOG..... 25c
25% with Order—Balance C.O.D.

**JOSEPH BROS.** 59 E. Madison St. Dept. H-2 Chicago 3, Ill.

**Your** Perfect Quality Jewelers' Findings

Order Through Your Jobber Now!
THE NEWALL MFG. CO.
CHICAGO 2 . ILLINOIS

**Watch Dials**

★ **Refinished**
★ **Modernized**
★ **Personalized**

Send your dials, including Calendars, Chronographs, etc., to experienced craftsmen for constantly satisfying results.

**AVAILABLE ON REQUEST**

Mailing envelopes, Price List, Counter-Display Sales-Aid Easel, and our new Natural Gold Color Illustrations of Modern 5-Ligne AS976 Stock Dials.

**GENEVA DIAL CO.**
17 West 46th St., New York 36, N.Y.
JUdson 2-0583

did and the watch will not keep correct time with the regulator on the center.

How about after you have finished overhauling a watch. Can you put the regulator exactly on the center and get a satisfactory six-position rate on your timing machine? It isn't hard if you know just what to do. Is this one of the things you might be interested in?

Ever see a watch without a regulator? Yes, there are thousands of them. Ever try yourself to throw away the regulator and make the watch keep correct time? Many of the highest grade watches are made without a regulator. We have plenty of customers that we never touch the regulator on their watches.

Do you know how to cement in a crystal so it will stay and not smear cement all over everything? Can you do a job that does not show that cement had been used? Simple when you know how. Does that one interest you?

Please do not get the idea that we "know it all" because we positively do not. We have "stickers, stoppers and comebacks" the same as you do. What we do is to really and sincerely try to determine the cause so we can prevent it happening again. In a way we are like the late Will Rogers when he said, "All I know is what I read in the papers." All we know is what we learn by actual experience.

During the past several months we have not published any of our correspondence although all those who wrote us did receive a personal reply by mail. We have accumulated a lot of letters which we believe are of general interest to our readers. In publishing these letters, we have omitted any repetition of items that have been covered in other replies.

## CORRESPONDENCE

Dear Mr. Anderson:

I am a new subscriber to the American Horologist and Jeweler magazine and therefore have missed the first few articles of your series about the "Watch Repairman and the Oscilloscope." However, those articles that I have read are magnificent, especially the one relating to watch oil and the one about new watches and their servicing. We here feel that it is time someone in the watchmaking profession who has had the necessary experience should muster the courage to "stick their neck out" and let the facts be published as they are without pulling punches.

It seems the repairmen are long overdue in receiving more consideration from the various watch factories, as well as in advancements in test and repair instruments of the nature of the oscilloscope.

After reading only those recent articles of yours on the oscilloscope, we have become interested enough in the instrument to consider setting one up in our repair shop here. We have discussed it with two different radio repairmen here and they are not familiar enough with our Paulson timing machine to be able to advise us on the hook-up. Could you find time to advise us a little more in detail as to how to hook up the oscilloscope? It is hooked up through the timing machine, is it not?

Also, can you advise us as to whether or not the various specifications listed for the various sizes and makes of these instruments make any difference in the results to be obtained? That is to say such specifications as the "horizontal and vertical rate of travel," etc.

Hoping to hear from you at your convenience.

Sincerely yours,

HAROLD C. FISCUS.

Dear Mr. Fiscus:

Thank you very much for your kind letter. It is letters like yours that make one feel their efforts are appreciated. It is too bad that you have not been an AH&J reader for years because you have missed many a worthwhile article on all kinds of horological subjects. Why not tell some of the other watchmakers around your town that they are really missing something worthwhile if they are not regular AH&J subscribers? After they have read just a few issues, they will thank you.

With regard to the names of the makes of watches with constructional faults, I would have to give to this considerable thought before "sticking my neck out" as you so aptly put it. Read what I said about this subject earlier in this article. There are those who feel that the watchmakers should find these things out for themselves and not be told about them. I thoroughly agree with you that something along this line should be done, but *by whom?*

There are several other watch faults that will be mentioned in forthcoming articles. I am trying to give information as to what the fault is without making it too plainly obvious as to the make and model. Those who have an oscilloscope and are using it will readily identify the makes and models as they have already written me. Many have accurately put their finger on the offender, although I did not write and acknowledge they were right, and some miscalculated.

There are many instruments the watch repairman could use to improve his work, cut down the time spent on each watch, turn out a better job with a much better average running rate. If you had ever worked in the repair department of one of the watch factories you would learn the very first day that we have thousands of unqualified workmen who are runining watches every day. You would also grow tired quite quickly of the senseless, idiotic questions that you are asked. Many factories feel (and possibly rightly so) that there are far too many workmen

who could not use advanced, improved methods and instruments if they were made available to them. Take the Stroboscope for example. How many watch repairmen ever heard of it? How many know what it does? They are quite reasonable in price, the best ones costing under $200.00. Then there is the Vibrograf, Spirograf, Contour Projector and many other instruments that are of inestimable value to the good watch repairman.

We were told quite emphatically by many when we started this series of articles that they would never "go over," prove popular, be understood by the watch repairman, and a lot of other things. We did not then believe these things and even if there had ever been the slightest doubt in our minds, it has all been removed. We know there are many highly conscientious watch repairmen who strive every day to become better workmen. It is to them in particular that these articles appeal, regardless of their present state of efficiency and proficiency.

Be careful in your purchase of an oscilloscope. There are 36 different makes on the market at the present time, ranging in price from just over $100.00 to around $12,000.00, and in size from 2 inches to 7 inches. The lower-priced ones, in the $150.00 to $200.00 class are the ones which are best suited to our work, as we are not doing laboratory research. If you get one that is too sensitive, your trace will bounce all over the screen of the cathode ray tube and you will find great difficulty in trying to stabilize it. If you will write me the make and model you consider buying, I will gladly give you my opinion as to whether or not it will be satisfactory.

As to connecting an oscilloscope to a Paulson Time-O-Graf: If you wish only the trace, connect the high side of the vertical input of the scope to the "hot" side of the headphone tip jacks and the ground side of the scope to the ground side of the headphone tip jacks.

If you wish to have the "marker" signal to tell you which one of the escapement sounds is printing the timing machine chart, it would be better to have a radio repairman make the necessary connections for you. This is quite simple. Tell him to wire in a double-throw, single-pole toggle switch. Connect the hot side of the phone tip jacks to one end of the toggle switch. Connect the other end of the switch to the grid pin of the 2050 tube (thyratron) socket. Connect the center of the switch to the high side of the vertical input of the scope. Connect the ground side of the vertical input of the scope to the ground side of the headphone tip jacks. With the switch thrown all the way over in one position you will have the regular trace the same as before. With the switch thrown to the other extreme position you will have the trace with the "marker" signal inserted. Some toggle switches have a center position which is neutral and with the switch in this position you will not have a trace of any kind, but will have the straight horizontal time base line only.

If you wish to have the 60-cycle sine wave to determine the time duration of the escapement action, this, too, is quite simple on most scopes. Secure a 1 megohm potentiometer at any wholesale radio parts house. Connect one end of the


BUY THE BRAND THE EXPERTS CHOOSE!

Sûreté Custom-made

BE SURE SEAL IS UNBROKEN

Sold Through Wholesalers Only

BE SURE SEAL IS UNBROKEN

REFILL No. 29 3 pièces Balance Staffs Sûreté Custom-made for ETA 8x9 1000 qualité supérieure

for all models.

REFILL No. 44 3 pièces Winding Stems Sûreté Custom-made for FONT 6¾x8 60 qualité supérieure

Carl Schneider PHILA. 5, PA.

MOTOR TROUBLE

If you are having trouble obtaining electric clock motors and electric clock coils, try us. We carry a tremendous selection of clock motors and coils for replacement. We also have available new complete Fit-Up electric clock movements which are ideal for converting old style spring wind clocks into modern electric clocks.

John A. Poltock & Co.

15 Maiden Lane New York 38, N.Y.

THERE IS NO SUB for QUALITY

This Package is Your Guarantee of FIRST Quality

REFILLS GENUINE NEWALL

NO. 713 TAP ¼ DOZ. 10 NEWALL QUALITY CROWNS 1/10-14 ASST. NO. 25 BOTTLE NO. 393

Order Through Your Jobber Now!

THE NEWALL MFG. CO.

CHICAGO 2 ILLINOIS

ARISTO LEATHER TRAVELING CLOCK CASES

No. 11A—Sheepskin case—Black, Brown, Blue, Red, Green, Tan, Keystone $7.00

No. 22A—Genuine Morocco Leather case — Wine, Red, Black, Blue, Brown, and Green.....Keystone $11.00

No. 35A—Genuine Ecrase Leather with gold tooled border. Brown, Tan, Rose, Blue, Green, Keystone $13

2⅜" and 2½" for Swiss and Waltham Immediate Delivery

ARISTO IMPORT CO., Inc. 630 Fifth Ave. Rockefeller Center New York 20, N. Y.

"pot" to the ground side of the vertical input of the scope. Connect the other end of the "pot" to the high side of the vertical input of the scope. Connect the center of the "pot" (slider) to one side of the filament of one of the amplifier tubes, but *not over 6.3 volts.* (2.5 volts is better.)

Most scopes already have either a 6.3-volt or a 2.5-volt A. C. connection brought out to a binding post on the front panel. You will find it marked either 2.5 V or 6.3 V 60-cycle, A. C. If there is such a connection or binding post on the front panel of the scope, then the center of the "pot" is connected to this post. If no binding post, then the connection must be made internally. You turn the slider of the "pot" until the 60-cycle sine wave is of whatever amplitude (height) you wish and you will see that the trace of the tick of the watch has been transferred from the straight horizontal time base line to a 60-cycle sine wave. Of course the connections from the Time-O-Graf are left just as they were, that is you have both the Time-O-Graf and the "pot" connected to the vertical input of the scope.

It is not advisable to make the "pot" connections permanent by soldering, as you will wish to switch from the 60-cycle sine wave to the straight horizontal time base line. To do this, you will have to disconnect the "pot." I use "alligator" clips for my "pot" connections, so I can almost instantly connect in the "pot" or likewise take it out. Remember the old-time battery clips that we used on battery radios? "Alligator" clips are the same thing, only they are small, long and thin like an alligator's jaws, being about the same diameter as a small lead pencil. I am sure your radio repairman knows what they are as he uses them with his test equipment. Do not leave the "pot" permanently connected to the vertical input binding post of the scope. Connect the "pot" in only when you wish the 60-cycle sine wave.

By varying the "sweep" knob on the front panel of the scope, you will be able to vary the number of cycles appearing on the face of the cathode ray tube. From peak to peak or valley to valley of each wave is 1/60th of a second, and dividing 60 into 1,000 (the number of milliseconds in one second) gives you 16⅔, therefore each sine wave is 16⅔ milliseconds. If the first "pip" of your trace (watch tick) appears on the peak of one sine wave and the last pip appears on the peak of the next sine wave, the time duration of the escapement action is 16⅔ milliseconds.

If you wish to know the exact number of sweeps per second, divide the number of sine waves appearing on the screen of the cathode ray tube into 60. For example, you have three sine waves appearing on the screen, dividing three into sixty gives twenty, which means you have a sweep rate of 20 per second. If there are four sine waves, the sweep rate is fifteen, if two sine waves, the sweep rate is thirty, and if only one sine wave, the sweep rate is sixty per second. You will find your most usable sweeps to be twenty and thirty per second. Fifteen sweeps per second is somewhat too slow as there will be a noticeable flicker in the trace. Sixty sweeps per second is too fast, because many watch ticks have a time duration of more than 1/60th of a second.

As already stated in my articles, any time duration of the escapement action which exceeds 18 to 20 milliseconds is not good. There is something wrong with the watch which will have to be corrected. You will usually find it to be one of two things, bad oil or a "set" mainspring, although a binding of any of the pivots can also cause a slow escapement action time. Binding pivots are rather difficult to determine in a watch that has not just recently been cleaned, because it is more than likely it is the oil or a bad mainspring. After you have carefully cleaned, oiled and overhauled a watch and the escapement action time is still over 18 or 20 milliseconds, then go looking for binding pivots. You can usually determine this beforehand, however, by testing the "back lash" after you have assembled and oiled the watch.

I am sincerely trying to make my articles beneficial and to give the watch repairman at the bench some actually usable information each month. It is quite difficult at times to know just what the readers want, therefore I must guess. Through letters like yours, it gives me ideas to write on because if you are interested in one particular phase of a subject, it is reasonable to assume that others are interested, but just haven't bothered to write in.

C. H. A.

* * *

Dear Mr. Anderson:

I have just received my copy of the AH&J, and one of the first things I read is your material on the oscilloscope. Your experience with this device is opening a new avenue of study into the complex behavior of the watch movement and of the escapement. If my praise for your work is of some encouragement, I feel that I have done some good.

In the November, 1953, issue of the magazine, you make a statement on page 57, first column, to the effect that the roller table receives a lift of 30° to every 540° of the balance. I think you might be mistaken here. The 540° lift refers to a double oscillation, one impulse clockwise of 270° (if the motion is ideal) and 270° in a counterclockwise motion. For each impulse of the fork to the roller by either the entrance pallet jewel or the exit pallet, the roller is in contact with the fork for 30° in a 3:1 ratio of the pallet fork and roller. The statement therefore should be 60° to 540° and your calculations amended accordingly. In fact, the 30° referred to in many texts (including my own) is for drop lock on very finely adjusted escapements. It does not include slide which makes for an additional 3°. In most modern watches, even pocket sizes, the ratios are a little greater and the angular motion is closer to 12°. The proportion of roller contact and balance arc would be closer to 80°:540°.

I'd like your reaction on this and would like to hear from you generally. I do enjoy your work.

A question was posed to me recently at "NJ" in regard to whether a balance actually came to a stop at the end of its motion or rather reversed its direction without ever actually stopping. My remarks were that the balance actually never did stop but made a sort of a script letter "E" turn on its way back, using the space for side shake in the jewel to construct this maneuver. I wonder how the oscilloscope could discover if this is so, how the balance behaves at the point where it returns under the force of the spring.

Good luck on your articles and I look eagerly forward to them. A little flub such as I caught happens all the time and it should not detract one degree to the effectiveness of your work.

With best wishes.

Sincerely yours,
HENRY B. FRIED.

Dear Mr. Fried:

Thanks very much for your most kind letter. A pat on the back from a man with the standing in horology that you have is most appreciated. There isn't any doubt but that the oscilloscope not only will but has completely changed the thinking of many of the world's outstanding horologists. May I cite my statement made in a former issue: "There is no such thing as drop lock in a running watch that is in good condition. There is only safety lock and total lock." As my articles progress, I will cite many other things that have been popular beliefs but are completely disproven by the oscilloscope. I am indeed fortunate in that I am able to correspond regularly with some of the world's most outstanding horological oscillographers. So far we all agree in our findings. Probably the only difference between the others and myself is that I have been publishing a very few of my findings.

With regard to the statement in the November issue of AH&J, I believe we are looking at the matter from different viewpoints. As I interpret your letter, you start with the balance at rest on the line of centers. From here it does move 270° (in a watch in good condition) either in a clockwise or a counterclockwise direction. But let me ask you a question: If the balance is on the line of centers, hasn't the roller table advanced from the time the roller jewel first struck the fork slot at entry to begin the unlocking action to the line of centers? Wouldn't this be equal to half the lift or 15° (not counting the degrees of lift lost in unlocking)? Therefore the lift would only be 15° out of 270°, or in other words, that part of the lift which is left after the balance has passed the line of centers.

My statement that the lift was 30° out of a total of 540° is explained as follows: We start with the balance *stopped dead* (notice I said "stopped dead") at the end of the balance arc, and in a total balance arc of 540° this would be 270° beyond the line of centers (either clockwise or counterclockwise). The balance travels back from its *stopping point* 270° to the line of centers and on 270° more to the other end of the balance arc, where it again *stops*. During this 540° motion the balance passed through a 30° lift. Do you agree?

To put it another way, let us say we have a lift of 30°, half of which is on each side of the line of centers. The balance has reached the end


WATCHMAKERS • JEWELERS
ENGRAVERS • INSTRUMENT MAKERS

**WE RECOMMEND SPECIALS FOR THIS MONTH:**

- Cabinet No. 141—1 gross Staffs in 24 bottles, 6 in each bottle, with interchangeability. Chart showing about 100 models, $15.00.
- Cabinet No. 121—1 gross Second Sweep Second, Minute and Hour Hands in 24 bottles, 6 in each bottle, $15.00.
- 1 dozen assorted Sweep Second Hands, 4 colors on card, $1.50.

We specialize in all tools not available on the domestic market—Special wholesale price on STAFFS - STEMS - MAINSPRINGS - UNBREAKABLE CRYSTALS. We are distributors of all domestic and imported TOOLS (Marshall, Newall, Bergeon, Levin, Barkus, Federal Crystals, etc.) MATERIALS, MOVEMENTS, BOOKS. We carry first-quality imported unbreakable mainsprings. We carry all dress and service watches, clocks, bracelets. Specify your requirements for catalogs or free information.

Remember our fast, dependable, economical REPAIR DEPARTMENT for all WATCHES, CLOCKS, (ANTIQUE ALSO) JEWELRY, CAMERAS, BINOCULARS! Request trade price list and FREE shipping labels.

**MODERN TECHNICAL SUPPLY CO.**
*Member of Jewelers' Board of Trade*
Dept. 3MAH, 55 West 42nd St., New York 36, N. Y.

MICROTIME WATCH and CLOCK OILS
BEST by TEST
Order Through Your Jobber Now!

THE NEWALL MFG. CO.
CHICAGO 2 ILLINOIS

**WHEEL and PINION CUTTING**
All work done in England. Excellent service. Averages 3-4 weeks. Must have sample. No wood. Let us estimate on your next repair job.
CHARLES TERWILLIGER Box 299A Bronxville, N. Y.

LET US PROVE!
THE SUPERIORITY OF THE PAULSON
TIME-O-GRAF

MAIL THIS COUPON TODAY
HENRY PAULSON and COMPANY
131 So. WABASH AVE. - - CHICAGO 3, ILL.
Please send me full information covering the Jewelers Biggest Business Builder, the Paulson Time-O-Graf.
NAME _____
ADDRESS _____
CITY _____ STATE _____

of its swing and is *stopped,* then it starts its return swing. It swings 255° from its *stopped position* without any contact with the roller jewel, the last 15° to the line of centers the roller jewel theoretically is in contact with the fork slot. Then on the other side of the line of centers, the roller jewel is in contact with the fork slot for the other 15°, and the remaining 255° is free swing. I believe the confusion came about by my starting with the end of the swing of the balance and your reasoning started with the line of centers. Of course we have left out all consideration of slide, pivot slap, loss lift and several other things. We are dealing with a theoretically correct escapement.

It is true that many workmen at the bench open up the banking pins until they have a total lever travel of 13° or more. Later on I will publish some oscillograms showing what this does, as well as some oscillograms with the escapement set just as close as it is humanly possible without tripping. I have some very fine watches of my own in which I have adjusted the escapement until you cannot see any slide even with an 18X loupe. There is just enough freedom all around for the watch to run beautifully. One of these watches runs within 3 to 4 seconds a month and the other one has never been off more than 5 seconds in a month. I attribute this to changes in barometric pressure and humidity, and I'm sure I cannot do anything about either of these two things.

With regard to your question as to whether or not the balance actually stops at the end of its swing, or merely reverses direction. Anyone with any knowledge of motion will readily agree that any object cannot be moving in a given direction then suddenly reverse itself and go (180°) in a diametrically opposite direction without coming to a dead stop. I say the balance does stop, but perhaps I have a different definition for the word stop. If you mean the *cessation of all motion,* then the balance does stop. I include in this any pivot slap or side play of the pivots. As the balance swings out toward the end of its swing, the force of the hairspring winding up or unwinding does throw the balance pivots to one side of the jewel hole, but stop and reason it out even if you do not use an oscilloscope or a stroboscope. Doesn't the force or tension of the hairspring increase gradually as the balance swings out until this force overcomes the motion or impulse given to the balance? Since this hairspring force is gradually increasing (either winding or unwinding) during the time such change in hairspring force is taking place, wouldn't this change in force exert a lateral pressure on the balance pivots moving the pivot over to the side of the jewel hole? Remember that at the end of the balance swing the hairspring is at maximum tension and when the balance is on the line of centers the hairspring is under no tension whatsoever. This is plainly visible in nearly all of my oscillograms, although I have not up to now tried to point it out to the readers.

If you will carefully examine groups four and five of the oscillograms, the little short (in height) pips appearing near the horizontal time base line are pivot slap. If you will carefully analyze any oscillogram you will see that there are many sounds of the escapement superimposed one upon the top of another. In some places you will find four or five sounds of lesser amplitude impressed upon the sounds of greater amplitude. Later on I will publish some oscillograms with arrows pointing out the peaks of various pips that are all superimposed one upon the other.

There are those who say that the balance does not stop, but that it merely reverses direction. Here again it depends entirely upon your definition of the word stop. If you mean the cessation of all motion, then it does stop. If you mean that the stopping time is of the nature of 1/10,000th or even 1/100,000th of a second, then you might say that the balance does not stop, since such a minute period of time was occupied by the stop. Later on I will publish oscillograms showing a balance stop as short as 1/100,000th of a second. If the stop time is of the order of less than 1/5,000th of a second or more, the watch is not in good condition and will not be a good timekeeper. The stop time must be 1/10,000th of a second or less for the watch to be in good condition and keep good time.

The subject is just a little complicated for the average man at the bench to understand without using several rather complicated drawings, but someone like yourself would understand it instantly once you saw it on the screen of the cathode ray tube. Then there is another method to prove the balance stops, without resorting to higher mathematics, the stroboscope. If you have a "strobe" throw it on a few balances and watch what happens. While you are at it, throw it on the pallets and watch the impulse, unlocking and locking actions.

Please understand me, I have absolutely no desire to find fault with anything you have said. You have your reasons for believing as you do, especially since you are one of the horological editors of one of the jewelry trade papers and likewise the head of the horological department of one of our most outstanding schools. For myself, I'm just one of the thirty-odd thousand who make their living by repairing watches at the bench in a jewelry store. Through mutual understanding and exchange of information with such men as yourself, the science of horology will advance by leaps and bounds in the foreseeable future.

Please allow me to assure you of my very best wishes and feel free to write me at any time you may desire.

Cordially and sincerely,
C. H. A.

* * *

Dear Mr. Anderson:

We have followed with great interest your articles on the oscilloscope and are thoroughly convinced that we must have one.

I enjoyed very much January's article on watch oiling. As you know, there have been numerous articles written and inquiries sent in pertaining to the oil problem. The procedure we have been

using is to peg all jewel holes and polish with swabs. However, before pegging we dip the pegwood into "are-tol" which is a Moebius product made in Switzerland to prevent the spreading of oils. By following this procedure we have not had too much trouble with oil. The question in my mind is, "Do you, using benzol and carbon tetrachloride, polish and peg your jewel holes or can you now eliminate this?" Personally, I have always felt that after pegging and wiping there was always the chance of leaving particles in or on the jewels which might serve as a wick to carry the oil to the plate. Needless to say, we blow them thoroughly with the bellows before assembling. As you know, it would save a lot of time if we could eliminate this.

Regarding "uprighting," you must have had about the same experience with your Seitz friction jeweling outfit as we did. We tried using the uprighting pump center tool in the jewel hole which was to remain stationary. This was not satisfactory. We then did them in the lathe using either face plate or cement chuck lining up the hole in the plate if it was the bridge that was off, then mount the bridge and bore to fit a larger jewel. We have also several times taken both jewels out and assembled the bridge or cock to the plate, then using the Seitz jeweling tool we enlarge the hole which is to remain stationary and go on through this one to ream the lower hole to the same size and upright with it. Would you please advise what you think of this? It seems to do a fairly good job.

Sincerely,
HUGH P. ABREY

Dear Mr. Abrey:

I am not acquainted with Moebius "are-tol," therefore cannot give you any opinion or suggestions. I have used the Chronax "Epilame" and did not like it. I thought it did more harm than good.

We know many watch repairmen who are using the benzol and carbon tetrachloride rinse that neither peg nor swab their jewels and seem to have perfectly satisfactory results. We, ourselves, believe in pegging and swabbing and that is what we do to our own watches. We feel that taking this precaution prevents the possibility of oil failure come-backs.

We know of many trade shops that do not take their watches apart, therefore could not possibly peg and swab the jewels. The work from some of these shops gives plenty of trouble afterward and have to be recleaned in the proper manner. You should see the oscillograms of these watches. I have never seen a good oscillogram from a watch cleaned in such a manner. Having worked in trade shops (especially to learn what they do and do not do), we know how most of them do their work. They take every possible short-cut. We definitely do not recommend the use of trade shop methods, especially in smaller communities where you know everyone and everyone knows you. There are jewelers in large cities who unfortunately do not figure on the customer ever returning to their store, therefore they do not care what is done or how it is done. They figure they will get you once only and that they had better get all they can at that time. I have actually seen them de-

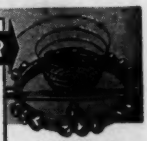

FOR
**CLOCK REPAIRS**
**OF THE HIGHES QUALITY**
*Call on the European Clock Makers of the*
**CLOCK MAKERS GUILD of America**
101 West 42nd Street New York 36, N. Y.
Tel. BRyant 9-6021

YELENIK
Manufacturers of a Complete Line
WATCH CROWNS - SPRING BARS
To Distributors, Wholesalers and Maufacturers
YELENIK MANUFACTURING CO.
476 Broadway, New York 13, N. Y. WOrth 6-2988

**SCRAP vs. MOVEMENTS**
20 Watch Movements sent for 1 lb. of any G. F. Scrap you send us.
5 American Pocket Watches..... $22.00
10 Swiss High-Grade Wristwatches..... 18.00
5 American Wristwatches: Eig., Walt., etc..... 18.00
15 Wrist Mvts., lever escapements..... 5.50
Above need minor repairs. Write for price list.
**B. LOWE, Holland Bldg., St. Louis 1, Mo.**

**WM. S. McCAW CO.**
WATCH MATERIALS — JEWELERS' SUPPLIES
JEWELRY — FINDINGS
Room 215-218, 320 Superior St. Toledo, Ohio

**WATCH DIALS REFINISHED**
**4 Days' Service**
Complete Line Watch Cases and Dials
**MICHIGAN DIAL REFINISHING COMPANY**
603 METROPOLITAN BLDG.
Detroit 26, Mich.


**KNOW YOUR VIBRATOR**
QUALITY • SPEED
• DEPENDABILITY •
Vibrating • Staffing
• Jeweling •
Mail Direct
Same Day Service
HAIRSPRING VIBRATING CO. P. O. Box 330 406 32nd St. Union City, N. J.

liberately break balance staffs, run a screwdriver through a hairspring, and many other things when they thought the customer was about to walk out and not leave their watch for repair. You cannot possibly do such things in a community such as yours. To properly peg and swab all the jewels doesn't take even a minute, so why not do it and avoid one more source of come-backs?

Using some of the attachments, you are supposed to be able to do uprighting with the Seitz jeweling tool. I have met very, very few workmen who could actually do it. Yes, the tool will do the job, if you use it right, but the chance of slippage is too great to try it. The correct method is to either use a face plate or a flat face cement chuck and a slide rest. Don't try to cut the hole out with a hand graver, the possibility of getting the hole absolutely true is too remote.

C. H. A.

* * *

Dear Mr. Anderson:

I have followed your articles on the "Watch Repairman and the Oscilloscope" with great interest.

I owned one of the first timing machines that came to my town back in '35 or '36. Naturally I am interested in such gadgets.

I own a WatchMaster at present and intend to get an oscilloscope to use with this machine, but am not sure what to buy. I am sending you a catalog which lists three different oscilloscopes. Now the question is, which of these should I get? I would like to get the kit and assemble it myself, but wonder if this would be a suitable scope. Do you know of other scopes that would be more suitable? Any information will be greatly appreciated.

Yours truly,
WINFRED LINDER

Dear Mr. Linder:

With regard to purchasing an oscilloscope, the cheaper ones are by far the best for our use. Since most of your work will be done by visual inspection of the trace as it appears on the screen of the cathode ray tube, I most emphatically recommend the largest tube face possible. At the present time this means seven inches.

The first two oscilloscopes mentioned in your letter have far too great a sensitivity. You will experience considerable difficulty in stabilizing your trace with either one of these, as the trace will bounce all over the screen. Remember back a few months where I said I was getting a new oscilloscope, then had to return it to the factory as it wasn't satisfactory? That was the second oscilloscope mentioned in your letter.

I do not recommend the purchase and assembly of oscilloscope kits. You would have to be a pretty good electronic engineer to make it work properly. It isn't just a matter of screwing down a few parts and soldering some wires. There are some very critical adjustments which will have to be made and you will have to know what you are doing. The instruments needed to make these adjustments will cost you as much as four or five good scopes would cost.

The more one knows of electronic engineering, the less likely they are to buy a kit and assemble it. You will be much better off to stick to a standard, factory-made instrument. Select some others and write me what they are, then I'll tell you if I think they will be satisfactory.

C. H. A.

* * *

Dear Mr. Anderson:

We are writing to you for some information. First, what is an oscilloscope? Where can one be obtained? The cost?

Thanking you for any information that you can give us.

Sincerely,
GORMAN DYE, JR.

Dear Mr. Dye:

Just three short, simple questions. But, oh brother, what a big book could be written to answer them fully and correctly.

Up to now, I have not published any picture of any model oscilloscope because I did not wish anyone to think I was thereby recommending any particular make of instrument, as there are 36 different makes now on the market.

Have you ever seen a television set? Radar? Sonar? If you have seen any of these, then you have seen an oscilloscope, because that is exactly what each of these three things actually are. However, in each of these cases, certain of the adjustments regularly found on the front panel of an oscilloscope have been placed inside the instrument where the user cannot get at them.

An oscilloscope will display on the face of a fluorescent tube a wavy line which is the sound wave of any type of a sound or an electrical impulse. It will also show anything else that is capable of being converted into an electrical impulse. For example, a microphone picks up the sound waves of a voice, a band, etc., and converts these sound waves into an electrical impulse. The oscilloscope turns these electrical impulses back into waves which are seen on the screen of the cathode ray tube as a glowing fluorescent line or lines.

Another example would be to use an oscilloscope as an extremely accurate thickness gauge where it would show differences of thickness of, say, one-millionth of an inch or less. This could be accomplished by having a set gauge of a predetermined thickness, then anything thicker trying to pass through the gauge would make an electrical contact which would be displayed on the screen of the cathode ray tube. A thin finger could be adjusted so that it would make contact with any article of the correct thickness but would not contact anything that was under in thickness. The amount of displacement of the finger could likewise be observed on the screen of the cathode ray tube.

Automobile manufacturers and some dealers are using oscilloscopes to tell which cylinder is not firing correctly, if one cylinder is receiving a richer gas mixture than the others, and a thousand and one other things. There are so many thousands of uses of the oscilloscope that it would not be possible for anyone to enumerate all of them. In fact I do not believe any one person knows them all. John Rider has written

an encyclopedia on the oscilloscope of more than 1,000 8½x11-inch pages and he readily admits he has only scratched the surface.

I feel sure you must have some radio, FM or TV servicemen in your city who use the oscilloscope every day in their repair work, as it is absolutely impossible to properly service either FM or TV without the use of an oscilloscope. I would like to see someone properly adjust the discriminator in an FM radio set without an oscilloscope. They would be most happy to show you their instrument in operation and to give you some idea of what they do with it every day. Then in turn you would be interested in seeing the oscillograms of a watch tick which have been published in the AH&J.

Oscilloscopes can be purchased from any wholesale house that sells radio repair parts. There are 36 different makes on the market. The price starts just above $100.00 and runs up into many thousands, depending on how complicated the scope is. They do not have a retail price as they are sold to radio repair men for service work and have only one price—the same as all other electronic service instruments.

C. H. A.

* * *

Dear Mr. Anderson:

I have noticed that your column in the AH&J magazine has been increasing in size. Glad of it because I really do find it enlightening and also enjoyable. The latter is a rather rare quality. Not too many technical articles are very readable.

After January's column, I should think that you would receive some activity from companies that market rinsing solutions!

Best regards.

Yours truly,
JAMES O. KNUDTSON

Dear Mr. Knudtson:

Many, many thanks "for them kind words," they are sure appreciated.

You may have noticed that I have used the Patek-Phillipe booklet which you so kindly lent me. Certainly when a company of Patek-Phillipe's standing makes such a statement to the watch owner there can be no further question in any watch repairman's mind as to the importance and necessity of the use of the oscilloscope.

As to the size of my column, I am not the publisher, but I understand that the size of my column is governed by the space available and the reader interest. The latter is shown by the number of letters that are written in. Any publisher likes to know that what he is publishing is interesting to his readers, therefore everyone who is interested in any specific article should take the time to write in and say so. It only takes a few seconds to write out a two-cent post card. Possibly the more that write in stating they like "The Watch Repairman and the Oscilloscope" the larger this department may become.

You are right, the first make scope mentioned in your letter is the one I am using, but it is the cheaper seven-inch model, not the expensive one.

I have not as yet (at the time this is being written) heard from any of the rinse manufacturers, although it is possible that the editor


**SPECIALISTS IN HARD-TO-GET PARTS**
Plates - Bridges - Bezels and Backs
Used Movements - Needing Cleaning Only
**STANDARD NAME WATCHES**
J. B. Watch Bands - Hanwil Mens' Jewelry
Write Postcard Today for Free Catalogues
**K.B.F. DISTRIBUTING CO.** WHOLESALE JEWELERS
71 Nassau Street New York 38, N. Y.

**STUCK FOR A MOVEMENT?**
or a watch part, or a difficult repair on a watch, clock or jewelry? We specialize in supplying unusual movements and parts. Write for descriptive brochure.
**BONDED MESSENGER SERVICE**
Box 13, White Plains, N. Y.

**ACON WATCH CROWN CO.** WRITE FOR SAMPLE
50 Eldridge St., New York 2, N. Y.
Manufacturers of Gold Filled Crowns
Complete line including waterproofs
Sold through Wholesalers & Jobbers

**COLLAR BUTTONS WANTED**
Cash paid for Dead Stock of Jewelry, broken antique jewelry, stick pins, cuff buttons, findings, broken bands, platinum. Check sent promptly. Satisfaction guaranteed.
**B. LOWE**
Holland Building
St. Louis 1, Mo.

**ONE DAY SERVICE**
Watch Material and Crystal Fitting
Denver's Oldest Genuine Material House
Cylinders Fit $1.00, Durex Fit 55c
Jewelry Repair — Dial Refinishing
Hairspring Vibrating
400-Day Domes 4½ x 8 $2.00—5½ x 11 $2.50
**UNITED TOOL AND MATERIAL CO.**
Box 1858 Denver 1, Colorado

**FREE! 400-DAY CLOCK REPAIR AID.**
Send for your FREE Copy of **The Horolovar 400-Day Clock News.** It gives correct Horolovar suspension spring strengths for all 400-Day Clocks imported since 1949 including the new "miniatures." Also, many other hints and aids. Enclose stamped addressed envelope.
HOROLOVAR CO.
BOX 299A, BRONXVILLE, N. Y.

may have heard.* However, I think it advisable to read the entire series of articles, then form opinions. Hope you like the entire series and that you get something worthwhile out of them.

Cordially,

C. H. A.

* (See page 76.—Ed.)

Dear Mr. Anderson:

I have been reading all your articles since they appeared in A.H.&J., and sure do enjoy them very much. A few years ago, after I bought my WatchMaster, I wondered if an oscilloscope could be used to analyze watch repair problems. Time passed with that idea in mind, but I just didn't know how to start. Now your oscilloscope column will be all the help I'll need.

Your article on the cause of oil failure in watches and rough holes in jewels is what I like, it sure helps. Oil failure, I just couldn't put my finger on it, when some were out 3 or 4 years and then some came back in 3 or 4 months with the oil dried out or gummy. It has been my opinion that so many repairmen make mistakes and bad jobs because they lack information on simple, easy cleaning jobs. And every repairman beams when a customer comes in and says, "Boy, my watch sure keeps good time since you fixed it." Makes working worthwhile, mentally and financially. With men like you, Mr. J. E. Coleman and Mr. W. H. Samelius and others as capable of writing articles, more men will be able to do a better job and raise the standard of watch repairing.

Yours sincerely,

GEORGE K. NORBERG.

P. S. I'll soon be able to buy an oscilloscope. My oscilloscope "kitty" is just about enough.

Dear Mr. Norberg:

Sure glad to know you are getting something out of these articles.

Possibly the main difference in what I write and what appears in other magazines is that I work at the bench every day the same as you or any other watch repairman does, so all my citations are from actual cases just as they go across my bench rather than theory. Then too, I sincerely try to stay away from merely rewriting some text book or what someone else has already written. I really do my best to give the readers information that has not been available elsewhere.

Keep your eyes open, some highly important things will be covered in forthcoming articles.

C. H. A.

Dear Mr. Anderson:

This short letter is to ask a few questions but mostly it is to tell you how much I appreciate your articles on the oscilloscope, especially the cause of oil failures. The best darn thing I've read! I'm always (like everyone) meaning to write my comments about something to my congressman or favorite horologist magazine or something, but I never seem to get around to it, but this is so good, I couldn't resist a pat on the back.

I certainly agree with you on the subject of publishing the construction faults of watches and I for one, would like to know the line of watches which have the trouble with rough jewel holes and the line with the out-of-upright pallet arbors.

Can carbon tetrachloride and benzol be ordered from such outfits as Standard Oil or some chemical supply house which do not can their product?

I certainly like your approach and style of writing. It ought to soak in on anyone.

Thanks for your time.

Sincerely,

JEAN W. FRANCIS.

Dear Mr. Francis:

I know that Americans are prone to put things off and depend upon someone else to do things. "Let George do it", as the saying goes, and it is seldom if ever done. So glad you did not continue your procrastination this time and thanks for your enthusiastic letter.

My experience has been that when a watch repairman knows what the construction faults are that it is very easy for him to determine by close observation which watches contain them.

It is my belief that if these faults were properly brought to the attention of the retail trade that manufacturers, importers and wholesalers would be more careful as they would most certainly not like to see these faults printed with their names attached.

You should not have trouble in obtaining any of the chemicals mentioned in my articles. They are regularly obtainable from wholesale chemical houses. They will sell you at their regular wholesale prices if you will buy from them in their standard container sizes. Look in the yellow pages of the telephone directory of any city with wholesale houses.

C. H. A.

Dear Mr. Anderson:

I would like to impose on your good nature and ask you some questions about your articles in the A. H. & J.

I was very impressed with your article on oil failure. I am a newer repairman and have thrown away oil that was not too old because of its apparent failure.

First, do you keep a bottle of oil until it is used or do you discard it after a period of time?

Second, the rinse I use comes in a can; can you tell me a brand that comes in a jug, not too large, as I don't use a large quantity?

Third, will you name the line that has the rough holes throughout the entire line, and the line that has the lower balance jewel too deep?

Four, please explain the uprighting operation.

Many, many thanks. I enjoy your articles very much. Keep up the good work. I like your examples of doing, as in how you oil the watch. If you do not feel free to answer all of these questions, I will understand. Thanks.

Yours

KENNETH L. KNOTT.

Dear Mr. Knott:

To answer your questions:

1. I usually use a bottle of oil until it is down to about one drop. It isn't Maxwell House Coffee, but it is good to the last drop. Above all else, ***keep your oil in the dark at all times.*** That is, keep the bottle in the box it came it,

or if it didn't come in a box, then put it in one. Keep it *stoppered up* at all times and keep the stopper tight so no air can get in. A cool, dry place is best; positively not in a heavy humidity.

2. As far as I know there is no rinse that comes in a jug, at least not at present. Neither do I know why the inhibitor could not be left out and the rinse packaged in a glass jug.

3. You will find the answer to this one elsewhere in this article.

4. I do not feel that up to the time this is being written that there were sufficient requests for the information on uprighting, therefore I am not publishing the information at this time. However, to each one who did write in, I am sending a typewritten article explaining it in detail. The same applies to what I said about isochronism in a former article.

Since you are in one of the largest cities of your state, I am quite sure you will find many wholesale chemical companies listed in the yellow pages of your telephone directory who not only can but will sell you any chemicals that you may need.

C. H. A.

Dear Mr. Anderson:

All the men in the repair department of the store where I am employed read your latest article on oil failure with great interest. All agree with you 100%. Keep more articles like this coming each month. They are very interesting and make sense from start to finish.

We are having plenty of trouble with a certain well-known make of watch and we were wondering if it could be the same one you referred to in your article that was coming from the factory with rough jewel holes. We would be very grateful if you would tell us which line of watches you had reference to. Also the ones that had the pallet arbors out of upright. The one with the balance hole jewel frictioned in too deep.

Also explain your method of "uprighting." We have the equipment to do it with.

Again let me congratulate you on the fine articles you have contributed to the repair trade and keep more coming.

CLAUDE A. HENDERSON.

Dear Mr. Henderson:

Glad to know all the boys in your repair department read these articles. Also glad to know they agree 100% on the oil failure problem. All the cases I write about are *actual* and not theoretical.

I sincerely hope something will be accomplished toward giving out complete and accurate information about watches with constructional faults. Take the automatic where the pinions of the second and third automatic winding wheels break off. The one where the oscillating weight bearing looks as though it had been liberally coated with powdered rouge. Ever notice how badly cut and worn the post becomes in just a few months? There are many more which I will mention from time to time.

Have you run across any of the new watches where the hairspring acts like it had been drawn from "stove pipe wire"? It sure looks and acts like it. Be extremely careful how you remove


Midwestco BRAND
Send a Trial Order Today

**Gold Filled Crowns**
Best grade—all taps and colors. Now only $1.00 dozen or $10.80 gross.
Finest Quality at Lowest Prices
GUARANTEED WATCHMAKERS SUPPLIES
**MIDWEST WHOLESALE CO.**
343 Commerce Exchange Bldg. Oklahoma City, Okla.

KNOW YOUR VIBRATOR
QUALITY • SPEED • DEPENDABILITY • Vibrating • Staffing • Jeweling •

Mail Direct
Same Day Service
HAIRSPRING VIBRATING CO. P. O. Box 330 406 32nd St., Union City, N. J.

**HAMILTON 992 Bs**
Prices from $35.00 to $40.00
CAN'T BE TOLD FROM NEW
R.R. Watches, all kinds; Wrist watches by ELGIN, HAMILTON, BULOVA
Write for Latest Price List
**Mark-Nelson Watch Co.**
1212 Holland Bldg., St. Louis, Missouri

**Publisher:**
**American Horologist & Jeweler**
**Box 7127,**
**Capitol Hill Sta.**
**Denver 6, Colo.**

**Please enter my subscription to the American Horologist & Jeweler at the subscription price of $3.00 per year.**

**CHECK ☐ NEW ☐ RENEWAL**

**Name**.....

**Address**.....

**City**.....

**State**.....

**Please check the classification of your business**

☐ Watchmaker
☐ Wholesale Jewelry
☐ Watchmaker-Jeweler
☐
☐ Retail Jewelry

**or Other Classification**

**$**.....**Enclosed. Check or money order. Do not send cash.**

A. H. & J.—3-54

the balance from the watch and above all else, *don't bend that hairspring,* you are in for trouble if you do.

As long as fellows like you continue to write in, these articles will continue. There is one thing though, I wish more would write in and tell what they wish written up, oscillograms of what faults they would like to see, etc. How about it? It only takes a minute and a two-cent post card.

C. H. A.

* * *

Mr. Orville R. Hagans
American Horologist & Jeweler
P. O. Box 7127, Capitol Hill Station
Denver 6, Colorado

Dear Mr. Hagans:

As an interested reader as well as an advertiser in your very good magazine, I read every article in every issue.

Again, as you know my primary interest is in watch repairing and the article by Mr. Carl H. Anderson on "The Cause of Oil Failure in Watches" prompts me to write an answer both in behalf of my company and in the interest of the watchmakers who have read this article and may draw improper conclusions.

You have visited my plant in Arlington and know that our very complete laboratory is in charge of a graduate chemist and that we are constantly working on all allied items whether of our manufacture or not in the interest of better watch repairing.

In all fairness to ourselves and to your watchmaker readers, I feel that the following answer to Mr. Anderson should be published in full:

Mr. Anderson's article on the cause of oil failure in watches was unfortunately based on two entirely incorrect premises, namely that watch oils are consistently good and that tin cans are consistently bad and therefore the cause of come-backs and complaints to the watchmakers. For purposes of brevity we have adopted the question and answer format.

*Ques. Are all watch lubricating oils of good quality?*

Ans. No. As determined by the United States Bureau of Standards in Washington and by our own laboratory, most oils fail to pass one of the first tests, known as the spreading test. When so tested most oils excepting a few of the newer synthetic ones spread out very badly, evaporate completely or in part, or gum up. These synthetic oils have begun to appear only during the last decade.

*Ques. Can any flux get into a can from the side seam?*

Ans. No. When a can is properly made by soldering on the outside as is done with food cans and L & R cans, no flux can possibly get into the tin can.

*Ques. Would lacquered cans be advantageous?*

Ans. No. Flakes of lacquer would separate from the can and eventually get into the watch parts.

*Ques. Is the test conducted by Mr. Anderson by placing oil on a piece of flux of any value?*

Ans. No. This test is absurd since any like amount of almost any chemical would destroy the watch oil.

*Ques. Do all watch rinsing solutions contain inhibitors?*

Ans. No. Only those rinses made from dangerous chemicals require an inhibitor.

*Ques. What is the purpose of an inhibitor?*

Ans. It is placed in carbon tetrachloride and other chlorinated solvents to slow down the formation of hydrochloric acid and has no relation whatsoever to the container.

*Ques. Does carbon tetrachloride always form hydrochloric acid?*

Ans. Yes. That is why the rinse suggested by Mr. Anderson is so dangerous. As the carbon tetrachloride evaporates off it forms hydrochloric acid, which especially in damp weather, starts a corrosive action. This action even if not visible has already done the damage, and given the right conditions will soon be apparent in the form of a rust film. This unfortunately, many watchmakers have proven for themselves.

*Ques. Is benzol also dangerous?*

Ans. Yes. Benzol is also very corrosive. You can prove this by removing the blue film from a piece of watch spring steel. Cut the steel in three equal parts and place one piece in each of three separate test tubes. In one tube place carbon tetrachloride so that the piece is only half immersed. Do the same with benzol and L & R Rinse. Stopper the tubes and let stand. In time carbon tetrachloride and benzol will rust the steel but not L & R Rinse.

*Ques. Is there any other danger in the use of carbon tetrachloride and benzol?*

Ans. Definitely. According to "Toxic Solvents" by Ethel Browning published in 1953 by Erward Arnold Co., London, England: "Carbon tetrachloride is a narcotic, unconsciousness may occur within one or two minutes of exposure to high concentrations such as would be produced by fire extinguishers or by escape of fumes. The most frequent cause of death is severe injury to the liver or kidneys or both. The lungs also may show severe injury. As for benzol (benzene) it is absorbed chiefly by inhalation and passes with great rapidity from the lungs into the blood stream. Some absorption may take place through the skin —apart from its defatting action on the skin. It is a powerful narcotic with the obvious consequences of collapse and unconsciousness. If inhaled in moderately high concentration it is an insidious destroyer of vital blood forming tissues, with little or no premonitory warning of ill health."

*Ques. Is benzol also a serious fire hazard?*

Ans. Yes. Benzol is highly inflammable and will ignite from an open flame even some distance away or from static electricity.

*Ques. Does L & R Rinse contain carbon tetrachloride, benzol or an inhibitor?*

Ans. Not one drop of any of these materials.

*Ques. Will L & R evaporate completely if used properly?*

Ans. Yes. It does not leave an oily film like inferior watch rinses nor does it leave a film of inhibitor as does carbon tetrachloride.

*Ques. What will this film do to watch oils?*

Ans. It will dilute them, destroy their action or cause them to spread oil over the watch with subsequent evaporation of the oil.

*Ques. Are all or even most rinses made by one oil company?*

Ans. No. L & R Rinse is especially made to L & R specificiations. Other brands of rinses are made by many companies and that is why there is so much difference between rinses.

*Ques. Can watch oils vary from bottle to bottle and season to season?*

Ans. Yes.

*Ques. Is watch lubricating oil made by motor oil manufacturers as Mr. Anderson implies?*

Ans. No. Motor oils and watch oils are entirely different. Motor oils must spread out and lubricate the entire engine. Watch oils, however, must stay in one spot and not spread, else they will lubricate the whole watch and having moved away from the pivot holes, will leave these dry. Therefore, an oil that "spreads very rapidly" is a very inferior oil.

*Ques. Why didn't watchmakers have as much trouble with oil years ago?*

Ans. According to the Bureau of Standards before World War I watch oils were made from a very specialized source. This source was no longer available during that war and substitutes appeared. From then on the oil difficulties started.

The foregoing questions and answers are the results of laboratory experiments which are available to any of your readers in any specific request which they may wish to make.

Very truly yours,
L & R MANUFACTURING COMPANY
Max A. Lazarus, President.

* * *

Mr. Max A. Lazarus
L & R Manufacturing Company
577 Elm Street
Arlington, New Jersey

Dear Mr. Lazarus:

Your recent letter to Mr. Hagans has been referred to me since I am the author of the article in question. Since your letter was written before the entire article had been published I feel it would be advisable to withhold any reply on my part until you have had the opportunity to read all that I have written.

Due to mechanical limitations of space the entire article was not printed in the January issue. It was continued in the February issue, and will not possibly be completed until the April issue. I do agree with many of the things in your letter, and you will find them in the March issue.

After you have had the opportunity to read the entire article, if you still feel you wish a reply to your original letter, or you wish to amend your letter in any way, I shall be glad to answer in detail.

There is nothing in the article anywhere which was intended as a comment on your products.

Sincerely yours,
Carl H. Anderson

* * *

*Editor's Note: On* February 23, 1954 the Industrial Laboratories Company, manufacturing and consulting chemists of Denver, Colorado, delivered to A. H. & J. an analysis report on one gallon of L & R Watch Rinsing Solution No. 3. The report stated that the solution contained no carbon tetrachloride, benzol or inhibitor. One quart of the sample taken from the can was reduced to dryness, and there was no residue. ILC also stated that, to their knowledge, there is no acid flux that would be soluble in the L & R rinsing solution.

## Coming Conventions, 1954

April 3, 4, 5—Kansas Retail Jewelers Association Annual Convention and Gift Show, Lassen Hotel, Wichita, Kansas.

April 25, 26—The Pennsylvania Retail Jewelers Association Annual Convention, Brunswick Hotel, Lancaster, Pennsylvania.

May 1, 2, 3—Louisiana Horological Association Annual Convention, Jung Hotel, New Orleans, Louisiana.

May 2, 3—Maryland-Delaware-District of Columbia Retail Jewelers Association Annual Convention, Hotel Dupont, Wilmington, Delaware.

May 2, 3, 4—California Retail Jewelers Association Annual Convention, Ambassador Hotel, Los Angeles, California.

May 2, 3, 4—Florida Retail Jewelers Association Annual Convention, Miami, Florida.

May 9, 10, 11—North Carolina Retail Jewelers Association Annual Convention, Robert Lee Hotel, Winston-Salem, North Carolina.

June 27, 28—New Hampshire Retail Jewelers Association Annual Convention, Wentworth-by-the-Sea Hotel, Portsmouth, New Hampshire.

July 25-29—NJA Annual Convention and Jewelry Fair, Conrad Hilton Hotel, Chicago, Illinois.

August 8-12—ANRJA Annual Convention and Trade Show, Waldorf-Astoria Hotel, New York City, New York.

September 4, 5, 6—United Horological Association of America Annual Convention, New Orleans, Louisiana.

# Jewelry Repairing

By R. ALLEN HARDY

MANY jewelry repair jobs appear to be highly intricate and great skill and "know how" seem to be the essential qualifications. Actually this is only partly true. Skill and "know how" are very important, but they are by-products of simple basic principles learned thoroughly. The basic principles are always simple and direct. The beginner in jewelry repair should concern himself only with learning the fundamentals at first, and let time and experience lend to him both skill and "know how."

**Soft Soldering**

For practice in soft soldering, cut a strip of flat brass; square the ends with a file. A strip of about 1 to 1½ inches will do. To this, solder a joint and a catch; select a pinstem of proper length and rivet, making a simple bar pin.

To do this job correctly, many minor operations are necessary. (1) Rough up the base or cup section of the joint, using any suitable file. (2) Select two spots near the ends of the bar to which the joint and catch will be soldered. These spots should be equally spaced from the ends of the bar, not closer than ⅛ of an inch. Scratch or rough up the metal with a file (the space should be no larger than the base or cup of the catch or joint). (3) Apply flux to the cup or base of the joint and catch (separately). (4) Cut off a small section of solder large enough to fill the cup of the joint or catch. Place flux and solder to the cup or base of the joint and catch (separately) and gradually heat over an alcohol flame (using tweezers) until the solder flows and fills the cup. (5) Apply flux to both spots on the brass bar. Place joint and catch in position (the catch on the left, open part facing you, joint on right). Hold entire assembly over an alcohol flame waving to and fro until heat is very gradually built up to the melting point of the solder. The solder will flow suddenly when the melting point is reached. Remove from flame instantly so that position of joint and catch is not shifted by bubbling solder.

To finish the pin, place the pinstem between the joint slot and with a suitable broach, gently ream out the hole to receive the tapered pin (to be cut and riveted). Select a brass wire that, when roll-filed to a smooth taper, will fit the hole snugly at both sides of the joint. Ream out the pinstem slightly larger than the holes in the joint, to allow for freedom.

Try the fit of the pin in the joint while the pinstem is in position. This appears to be a trivial job but in reality requires very precise and careful fitting. The pinstem must be free enough on the rivet pin to assure easy operation. It should not be so tight that pressure is required to close it in its catch; neither should it be so loose that it will drop of its own weight. Freedom with the barest amount of sliding friction (enough to prevent it from dropping) is a happy medium.

While the pinstem is in this adjusting phase of the operation, consider the closing into the safety catch. Usually a minor filing operation is required at the base of the pinstem beneath the hole location. This flat section is generally too large to allow the point of the pinstem to engage in the slot of the safety catch. By reducing it, a little at a time, using a small file, the point can be made to engage. Enough metal is left to allow for a little tension.

Cut the roll-filed brass pin close enough to the joint to insure an adequate rivet. With a bench block and a riveting hammer, lightly tap the ends of the brass pin, gradually spreading the ends of the pin to a secure rivet. Test the freedom of the pin-

**Mr. Hardy invites your questions pertaining to jewelry repairing. Questions should be directed to Mr. Hardy, c/o The American Horologist & Jeweler, Box 7127, Capitol Hill Station, Denver 6, Colorado. Please enclose a self-addressed, stamped envelope.**

stem. If freedom is good, then the excess metal riveted over may be filed away, to leave a neat appearance. Care should be exercised here, for if at the initial cut the size of the rivet was not excessive, no filing away would be necessary. The last step is to provide tension with the pinstem to insure against loss of the entire piece while being worn. Since the slot in the catch is pointed downward, it is necessary to create tension away from the opening by bending the pinstem upward. This is done by use of snipe-nose pliers placed close to the joint. The bend upward is very slight.

And now a word about riveting and the riveting hammer. The riveting hammer is a very light weight steel hammer with a slender wooden handle. The hammer is delicately shaped and well balanced. The riveting section is wedge-shaped with a thin, slightly rounded edge. To rivet a pin through a pinstem and joint, rest one end on the edge of a steel bench block and with the wedge-shaped section of the riveting hammer strike the exposed end of the pin several light blows. This will start the exposed end of the pin to spread. When the end appears to be spread enough so that it will not slip through the hole in the joint, reverse the position and rivet the other end.

To finish both heads of the rivet, use the flat end of the hammer tapping lightly, using the bench block as before. Many light blows striking the rivet from all sides by slightly changing the angle of the hammer will result in a round, polished head that needs only to be touched to the buff for finishing. If the rivet is too heavy, the excessive metal may be removed with a small file although it is better to form the habit of riveting without the use of the file. The appearance is neater.

Once the principle of soft soldering is learned, there should be little difficulty in repairing the numerous different types of jobs that will come up for repair.

It is wise to remember a few *dont's*, such as: (1) Don't use an excessive amount of solder. (2) Don't attempt to solder before cleaning the areas thoroughly and roughing up with a file. (3) Don't use soft solder when the article was previously put together with hard solder. (4) Don't risk repairing articles composed of metals that have approximately the same low melting point of the solder. This can be detected by making a slight cut (on the unexposed side) with a graver. Soft metals with low melting points can easily be detected in this manner. Quite a bit of costume jewelry of the less expensive class is composed of such metal and is not worth repairing. At the touch of a flame, some of it will lose its original shape almost immediately. Then, too, if it does hold its shape and the joint is completed, the finish or luster of the article may be destroyed.

### Hard Soldering—By Flame

It is to the beginner's advantage to do a lot of practice work in hard soldering before attempting to do any real repair job. A feel for the hard soldering operation should be acquired first.

For simple practice work, select a piece of round brass wire of a diameter equal to the average lady's ring. File the ends square and bend it in the shape of a ring, using bow pliers and the half-round ring-bending pliers. Bring the two ends together absolutely flush, no daylight showing between the joint. If there is light showing, open the joint slightly, make the necessary filing adjustment and close the joint again. Repeat as often as necessary until the joint is flush. Place the ring on an asbestos soldering pad; with a small brush apply the flux to the joint; cut a small piece of silver solder and lay it directly over the joint. With a blue flame, gradually warm up the entire ring and area around it by waving the flame back and forth. As heat increases, gradually centralize the flame around the joint and very patiently wait for the solder to flow. When the melting point of the solder is reached, it will suddenly disappear through the joint. The flame should be removed instantly.

The procedure sounds all very simple. However, many minor factors are involved that can cause much distress and difficulty if not executed properly.

One feature worth a lot of consideration is the size of the flame used in soldering the joint. Flame soldering outfits usually come equipped with several different size nozzles. For the soldering job just described, one should be selected that will project a medium-broad blue flame. If too small a flame is used, the heat cannot be centralized at the joint (it will run away

too fast). If too large a flame is used, the solder may melt too soon and form a ball that cannot be coaxed to flow into the joint. Only through this sort of soldering practice can one learn to judge for himself just which nozzle should be used and how to regulate the size of the flame.

The same brass ring may be soldered by holding the ring in soldering tweezers rather than by laying it on the asbestos pad. To do this, hold the ring with joint upward. Place the solder (after fluxing) on the top of the joint; with the same blue flame, gradually heat the ring (by waving the flame to and fro, starting at the widest section and gradually working upward toward the solder). When the melting point is reached, the solder will flow downward in the direction of the flame. This method takes a little more heat since it is not aided by the asbestos pad.

It would be advisable to note, at this point, a very important factor to any soldering operation—the correct amount of solder to be used. Excessive solder is a waste of material as well as time, for on any ring job the surplus must be filed away. A minimum amount, just enough to flow through the joint, is adequate. Solder may be cut in tiny little squares to avoid waste and use of excessive amounts.

For further practice in hard soldering, one should increase the size of the brass wire to be soldered until the equivalent of a man's heavy ring is reached. This will necessitate the use of different size flames and will increase skill.

Then, for finer work, gradually decrease the size of the brass wire until the smallest available size can be soldered easily.

Next, solder brass wire of a small diameter to wire of a large diameter. When the smallest can be successfully soldered to a large piece, then a considerable degree of skill has been acquired and more advanced jobs may be attemptd.

As explained under the section entitled "Soft Soldering," prepare a brass bar to which will be hard soldered a catch and joint. The procedures are alike, with the exception of the actual soldering. First, flow the solder in the cups of the joint and catch, respectively. They may then be placed in position on the brass bar (to which flux has been applied but no solder). Keep the heat away from the joint and catch as much as possible. Gradually heat the bar until the heat from the bar melts the solder on the joint and on the catch. In this manner the flow of solder can be managed easily. Warning: Too much direct heat on the catch may cause the sliding action of the safety device to "freeze."

### Hard Soldering—By Electric Soldering Machine

The technique of hard soldering by electric soldering machine is quite the opposite from flame soldering. Flame soldering is slow in comparison where machine soldering is rapid.

For practice it is suggested that the same brass rings are prepared as explained under the section entitled "Hard Soldering by Flame."

Start with a medium weight brass wire and gradually increase the size. The joint is prepared as before; the soldering mashine clamp is used to hold the ring while presenting it to the carbon.

Some jewelers place the solder on the carbon and place the joint over the solder as contact is made. I have always preferred to do the opposite, placing the ring in direct contact to the carbon, with the solder on top of this joint toward the heat.

At first, it will be necessary to experiment in order to find exactly where the rheostat should be placed. If placed at too low a heat the flux may lose its effect, even though enough heat may be eventually generated to melt the solder. If placed at too great a heat, the solder will melt too rapidly and boil; also, the ring itself may be melted or burned. Just the right heat will cause the solder to flow a second or two after contact. The contact is then immediately released and the joint is smooth.

For very fine work with the soldering machine, a pencil carbon attachment may be used instead of the all-purpose carbon mounted directly on the machine. In this way the carbon is brought to the work, rather than the work to the carbon. Small chains may be soldered using the fine pencil carbon.

For additional practice using the electric soldering machine, any two pieces of brass of varying thickness may be soldered to-

gether using the machine clamp to hold the one and soldering tweezers to hold the other.

The beginner will do well not to attempt any real jobs with the soldering machine until a degree of skill is attained through much practice with different thicknesses of metals.

### Making a Band Ring

Nothing has been said so far concerning the cleaning up and finishing of a soldered job, obviously because this in itself is a separate category to be learned in detail just as soldering is learned.

To complete a job from start to finish, prepare to make a ring from a flat piece of brass, about 2x1½ mm. Any size from about 5 to 7 will do. Shape the ring and prepare the joint as previously explained. Solder the joint and place the ring on the steel ring mandrel and pound lightly; with the No. 2 half-round file remove any excess solder on the inside of the ring. Finish off with the No. 4 half-round file. Place on the mandrel again and pound lightly until there is no light showing between ring and mandrel. Note: Reverse ring continuously while pounding to avoid a tapered shape.

The ring is now ready to be shaped by filing. The outside is rounded by first beveling the edges and then gradually filing them to the desired shape. This may be partly done while the ring is on the mandrel, using a smooth-edge flat file for the beveling operation—file cut No. 2. For the finishing work with the No. 4 file (flat file or barette) the approach is somewhat easier if held in the fingers against the bench pin.

When the outside is smooth, select a No. 4 half-round file to smooth out the inside of the ring.

If the ring is thinner on one side than another, it may be evened up by placing it flatly on top of the bench pin and with the No. 2 file, reduce it in thickness at the high spot. To even up a ring all around, turn continuously with the fingers while filing lightly. The last operation is to remove the sharp inside edge by beveling or rounding very slightly with a half-round file.

Every hard-soldered joint is left with a scale of oxidization which shows up as a black discoloration. This is removed by plunging the article into a cold solution of 8 parts water and 2 parts sulphuric acid (hot solution, 9 parts water and 1 part sulphuric acid). After removing from the acid bath, the article should be placed under running water. The stain, which still may show slightly, is easily wiped off with a cloth, leaving the joint perfectly clean.

---

## A One-Minute Business Sermon

By DAN VALENTINE

Experts have always been on hand to tell jewelers just exactly what advertising *will* do to increase business.

But have you ever taken into consideration exactly what advertising *won't* do for your establishment?

It's something to think about.

For some good examples of what advertising—no matter how good it is—*won't* do for your firm:

Advertising won't do anything lasting for your jewelry firm if the quality of your products doesn't live up to maximum standards.

Advertising won't do a thing for your firm if your prices are far out of line with your competitors.

Advertising will be just a waste of money and time if your establishment does not give good—and courteous service—to your patrons.

Advertising doesn't mean a thing if it isn't sincere and honest—people won't believe it.

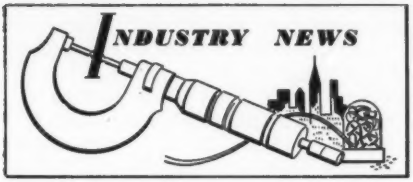
Advertising may bring new customers into your store—but no advertising in the world will keep them coming back if they do not get value received.

Advertising is not magic. Advertising is not the great cure-all.

Advertising is merely the instrument to make your firm known to the public.

No advertising copy can counteract mediocre service, poor products, outrageous prices.

Advertising doesn't insure success in the retail jewelry field—it merely makes success easier and more swift for the good jewelry dealers.




## SWISS WATCHMAKERS OFFER FREE TECHNICAL BULLETINS

A folder containing 11 four-page Technical Bulletins on the repair of chronographs, self-winding and calendar watches are now available without charge to the U. S. jewelry and horological trade, it has been announced by the Watchmakers of Switzerland.

Request cards for the folders have been distributed to established material jobbers throughout the U. S., and are available to the individual jewelers and watchmakers upon request.

Covered by the Technical Bulletins is the disassembly, servicing, and assembly of the following calibers:

1. Le Landeron 48—Recording chronograph with two pushers, without pillar wheel.

2. Valjoux VZ 23—Recording chronograph with two pushers with pillar wheel.

3. Venus 188—Recording chronograph with two pushers, without pillar wheel.

4. A Schild 1361—Lever movement, self-winding, with sweep second.

5. Felsa 690—Lever movement, self-winding, with sweep second.

6. Eta 1256—Lever movement, self-winding, with sweep second.

7. Felsa 692, 693, 694—Lever movement, self-winding, sweep second, with date showing through aperture in dial (cal. 692); date showing through aperture in dial, and corrector (cal. 694); calendar and moon phase devices (cal. 693).

8. A Schild 1382, 1395, 1396, 1402—Lever movement, self-winding, sweep second, with reserve power indicating device (cal. 1382); day and date showing through two apertures in dial, one corrector (cal. 1395); date showing through one aperture in dial, one corrector (cal. 1396); calendar and moon phase devices (cal. 1402).

9. Le Landeron 148—Recording chronograph with adjustable hammer and minute heart.

10. Le Landeron 185, 186—Recording chronograph with adjustable hammer and minute heart and calendar device (cal. 185); calendar and moon phase device (cal. 186).

11. Valjoux 72, 72c, 88—Minute recording chronograph with hour-recording device (cal. 72, VZ H); hour-recording and calendar devices (cal. 72c, VZ, HC); hour-recording, calendar and moon phase devices (cal. 88, VZ, HCL); also Valjoux 90—Lever movement, sweep second, with calendar and moon phase devices.

In urging the trade to send in completed request cards for the folders, Paul Tschudin, director of the Watchmakers of Switzerland Information Center pointed out that the use of these Technical Bulletins will enable the man at the bench to profitably service many of the new Swiss-made special feature timepieces that are becoming popular and which are being purchased by American consumers.

## J-B WATCH BAND COMPANY CONSTRUCTS NEW FACTORY

Max Jacoby, president of Jacoby-Bender, Inc., New York, has released information that his company is now erecting a two-story factory building on Northern Boulevard, Woodside, Long Island. The new plant will be occupied exclusively by J-B and will be devoted solely to the manufacture of J-B Watch Bands for men and women.

The factory, which occupies a full block frontage, is constructed of heavy steel with the outer walls brick and stone. Provision has been made to provide more than double the floor space presently occupied by the company at 161 Sixth Avenue in New York City.

In announcing the construction of the new factory, Jacoby stated that his company had closed 1953 with the biggest volume of business in the history of the firm, and that the need for a factory was established by the yearly increase in sales during past years.

"Our new factory, when completed in early July, will enable us to greatly increase our production capacity and thus put us in a better position to serve our wholesalers more efficiently," Jacoby stated.

## CLASSIFIED

**RATES** (Payable in Advance)

UNDER ALL CLASSIFICATIONS, excluding Positions Wanted, $2.50 for the first 25 words, ten cents for each additional word.

POSITIONS WANTED, $1.00 for the first 25 words, five cents for each additional word.

BOX NUMBERS, or Blind advertisements, 50 cents additional for postage and handling.

### SERVICES AND TRADE WORK

Chronographs, Datographs, Automatics Only
Repaired for the trade
WatchMaster tested
Write for price list
C. L. Penrod, Watchmaker
% Ent Air Base PX
Colorado Springs, Colorado

WANT FEWER COMEBACKS?
TRY MY WATCH REPAIR SERVICE
WATCHMASTER TESTED
DAVID G. PHELPS
701 PERSHING AVE.
WHEATON, ILLINOIS

OLD WESTERN COMPANY
Offers Complete Watch Repair Service for the Trade. Send for Price List.
K. H. FRIEDLY
P. O. Box 1205
Burbank, Calif.

Guaranteed — Expert
**Watch & Clock Repairing**
Specialized in
**Seth Thomas Clocks**
**K. A. Kruger**
Certified Watchmaker
47 Marine St., Thomaston, Conn.

NEW CLOCK MATERIAL
Junghans, Becker, Keizle, Mauthe, French, Herschede, Revere, Kundo, Schatz and Cuckoo, Seth Thomas, Antique Parts, 400 day. American Chime and others. Dial, Weight Shells, Pendulums, Metal and Wood Case Refinishing of all types. Send Part or Movement only. Vin Acco Time Repairs, 2221 Fowler Street, Cincinnati 6, Ohio.

CLOCKS REPAIRED, ALL MAKES
Foreign and domestic spring, weight and electric special movements—prompt service. Work guaranteed.
GEM CLOCK SERVICE
5423 West 25th St.
Cicero 50, Ill.

**TWEEZERS RECONDITIONED**
**Expert work, old watchmaker-toolmaker. Satisfactory service guaranteed. 50c A PAIR—plus postage and insurance. THE HOME SHOP, % G. C. FELLOWS, Box 156, Sanford Florida.**

HAIR-SPRING
TWEEZERS
Hardened, Tempered, Sharpened
VALDEMAR VIRTANEN
Box 69, Morristown, N. J.

EXPANSION BANDS REPAIRED
**FLAT RATE OF $1.00**
24-HOUR SERVICE — NO RIVETS
ALL BANDS FINISHED LIKE NEW
OUR WORK GUARANTEED
EVERY TYPE OF
JEWELRY REPAIR DONE
EXPERT WATCH REPAIR
MORLEN REPAIR SERVICE
7815 S. CONSTANCE AVE.
CHICAGO, ILLINOIS

### SERVICE AND TRADE WORK (Cont.)

EXPANSION BANDS & LIGHTERS
Repaired
75c plus material cost.
Ring Sizing 75c & up.
24 HOUR SERVICE
G & H REPAIR SERVICE
Rt. # 1, Crete, Ill.

**WATCH REPAIRING**
**5-DAY SERVICE**
**All Work Tested On**
**WatchMaster**
**Price List on Request**
**MERIT WATCH REPAIR**
**1105 So. 49th St., Phila., Pa.**

Boston, Massachusetts. Guaranteed Trade Watch Repairing. Chronographs a Specialty. Excellent service. Electric timing. Prices on request.
Charles L. Birdsall
Jewelers Building
373 Washington Street

**JEWELERS STOP!!!**
"Chronographs and Automatics"
We offer expert watch repairing at lowest prices. All Work guaranteed. We Pay Postage. Write for estimate.
Thomas Boyd
Dept. hj
P. O. Box 107, G. P. O.
New York 1, New York

BETTER PAPER CLOCK DIALS
Your exact size — no trade marks — including Calendar and Steeple—Roman or Arabic. For information write Custom Dial, 5837 North Hope St., Philadelphia 20, Pa.

Wheels, Pinions, Ratchets and escape wheels made to sample.
Broken teeth replaced in wheels and barrels. Type "C" Hammond motor replacement with self-starting synchronous motor.
Cycloid Milling Cutters.
CATALOG
WILLIAM A. PHELPS
4106½ Glenway Avenue
Cincinnati 5, Ohio

KNOW YOUR VIBRATOR
Quality — Speed — Dependability
Vibrating — Staffing — Jeweling
Mail Direct—Same Day Service
Hairspring Vibrating Co.
406 32nd St.
Union City, N. J.

**A Watchmaker's Watchmaker**
We specialize in chronographs, repeaters, making parts, jewel fitting, repivoting, wheels and pinions made, all repairs WatchMaster timed.
**H. P. Wlosko**
150 Nassau St.
New York 38, New York

## SERVICE AND TRADEWORK (Cont.)

**HIGH GRADE WATCH repairing to the trade. Chronograph and repeater specialists; 3 to 5 day service: all work at reasonable prices and fully guaranteed for 1 year. Watches timed and tested on WATCHMASTER. Insured shop; 8 first-class watchmakers at your service. References and price list on request. Mail orders our specialty. A. H. Schierer, 101 S. Marion St., Oak Park, Ill.**

Watch and Clock Repairing
Clocks of all types rebuilt. Chronographs repaired. All work tested on WatchMaster
Price list on request
Penrod's Watch and Clock Shop
2305 E. Platte Ave.
Colorado Springs, Colorado

**Worried about that watch repair job? My special service will solve your problem. Write for circular.**
Harold C. Kelly
263 May Avenue
Monrovia, California

**Send me your chronographs only.**
**Fast service.**
Prices on request.
C. G. Garabedian
88 Charles St., Boston 14, Mass.

**We offer the best service in Chronographs, Automatics, and all makes of watches and clocks. Complete overhauling or partial repairs, like staffs, jewels, etc. Expert and guaranteed workmanship. WatchMaster tested.**
**Carl A. Norman**
21 West 47th St.
New York 36, N. Y.

## BOOKS

**HOROLOGY BOOKS**—Catalogues, Pamphlets. Send your wants. Free list. H. Birnbaum, 218 East 59th Street, New York 22, N. Y.

Helpful Hints on Watch Repairing. 64 page book; 100 illustrations. 75c per copy. Dean Company, Box 3218, Daytona Beach, Florida.

Watchmakers Journal contains instructive articles for watchmakers, students and collectors. $1.00 year. Sample copy 20c. Dean Company, Box 3218, Daytona Beach, Florida.

Free Catalog—Illustrating the latest style Famous Name Brand Watches and Sterling Silver. Write to Dept. 0-5, % American Horologist and Jeweler, P. O. Box 7127, Capitol Hill Station, Denver, Colorado.

"KNOW THE ESCAPEMENT"
Revised to make it the simplest, easiest to learn and yet the most advanced text book on the escapement. Over 200 pages, divided for easy reference. Only $5.00. Barkus Horological Laboratories, 2621 University Ave., San Diego, California.

**SWISS WATCH AND JEWELRY JOURNAL—All-English Language Edition of the "Journal Suisse d'Horlogerie et de Bijouterie." Finest source of information on watch making, watch repairing and watch selling. Issued bi-monthly. Subscription $5.00 one year, $9.00 two years. U. S. Agents: OVERSEAS PUBLISHERS' REPRESENTATIVES, 66 Beaver Street, New York 4, N. Y.**

## BOOKS (Cont.)

Practical, time-saving help for watch and clock makers
"THE MODERN CLOCK"
By Ward Goodrich.....$4.95
('502 pages on clock repair)
"THE WATCHMAKER'S LATHE"
By Ward Goodrich.....$3.95
(264 pages on the American lathe)
"PRECISION TIME MEASURES"
By Charles Higginbotham.....$4.50
(354 pages on watch repair)
All 3 books $12 postpaid.
COD's, postage extra.
Order from your supplier or direct from publisher:
NORTH AMERICAN — Dept. 84C
2320 Milwaukee Avenue, Chicago 47, Illinois

Illustrated quiz questions, problems and solutions for students, apprentices, and advanced watchmakers. Helpful for exams; reviews; reference. 333 QUESTIONS and ANSWERS. $1.75 postpaid. Seven-day return privilege. Chicago School of Watchmaking, 2330 N. Milwaukee Avenue, Chicago 47, Illinois, Room 214C.

## POSITIONS WANTED

Watchmaker desires work in West or North. Graduate. Three years experience. Write Box 31, American Horologist & Jeweler, P. O. Box 7127, Capitol Hill Station, Denver 6, Colo.

Watchmaker, single, 31 years old. Has had store, also managed one. Good references. Prefer No. California, Idaho, Oregon, Washington, Reno, Nevada. Will consider Alaska. Write: W. O. Anderson, P. O. Box 474, Escondido, California.

Expert watchmaker, age 40, single, superior calibre, formerly self-employed, seeks position as manager or watchmaker in jewelry store. Adolf Luscher, Hannover-Dohren, Wiehbergstrasse 5, Germany.

## DIAMONDS AND GEMS

**DIAMONDS—LOWEST WHOLESALE PRICES**
Airmail for price list and particulars about direct import. Established jewelers only. Joachim Goldenstein, Diamond Club, Antwerp, Belgium.

Ring stones: Genuine, synthetic, imitation, any size or shape. Stones set, rings sized. Titania gems, any size also mounted. Ace Lapidary, P. O. Box 67, Jamaica, N. Y.

## STORES FOR SALE

Jewelry and Music Store, Northern Idaho mining town. Same location 25 years. Sell for below inventory, approximately $12,000.00 to $15,000.00. ⅓ down. Phone: 2161. Write: Box 449, Kellogg, Idaho.

## WANTED TO BUY

WATCHMASTER, please state condition, serial number, reason for selling, and lowest cash price.
No other machine considered. Write Box 20, American Horologist, P. O. Box 7127, Capitol Hill Station, Denver 6, Colo.

## ARTICLES FOR SALE

**SAVE ON WATCH MATERIAL**
**USED AMERICAN WATCH MATERIAL ½ THE PRICE OF NEW MATERIAL**
**SEND SAMPLE**
**Used Pocket and Wrist Watches**
**M. PRESANT**
192 N. Clark St.
Chicago, Illinois

---

For Savings, quality, service, try Wilson extra special combination for Schild 970. You get one dozen each — staffs — stems — crowns, second hands, pushpins ⅝, all for $2.00 and self addressed stamped envelope. "Money back guarantee."

Wilson
77 Faile St.
New York 59. N. Y.

---

Surplus lot New Westlake Staking Tools, Factory Guaranteed—100 Punch—20 Stump, with handpress lever and hardwood case. Being sold at less than cost. Send check or money order, $36.00 each.

Progressive Products Co.
26 Fitch St.
So. Norwalk, Conn.

---

Swiss Wrist Watch Movements, 25c, 50c, 75c, $1.00. American Wrist and 18 size. $1.00-$1.50, 7-Jewel. $2.00-$2.50, 15-Jewel. 5 Swiss Wrist Watches $5.00. 5 American Wrist Watches $10.00. All need repair. 50 Assorted gold-filled crowns, new for wrist watches, $2.00.

Morris Frey Watch Co.
916 Holland Bldg.
St. Louis, Missouri

---

**ENGLISH CLOCK MOVEMENTS, grandfather, grandmother, regulator, wall barometers, 3¼ inch, 30 Hr. Insert Units. Clock Supplies, Dials, Bezels, etc. R. W. Holwick, 177 S. Anacapa St., Ventura, California.**

---

**CLOCK MATERIAL**
**Krause Bros.**
**Wholesalers and Manufacturers**
**179 W. Washington St., Chicago 2, Ill.**

---

SPECIAL GET ACQUAINTED OFFERING!
1 dozen staffs and 1 dozen stems for Font 60 only. All this for $1.00 and self addressed stamped envelope. Satisfaction guaranteed or your money back.

Willis Importing Co.
509 Willis Avenue
New York 55, N. Y.

---

**USED tools, benches, lathes, Cleaning Machines, Staking Tools, Etc. R. P. GALLIEN & SON, 220 W. Fifth Street, Los Angeles 13, Calif.**

---

10 high-grade Swiss wrist watches needing very minor repairs, $18.00. Catalog 10c. Charles Berkowitz, 1150 Castlehill Avenue, Bronx 62, New York.

## ARTICLES FOR SALE

Send Me One Dollar!
I send you 3 crowns, 3 stems, 3 staffs, and 1 mainspring for FF60—or for any other popular make watch. All materials guaranteed first grade.

E. A. Phillips
2831 Lombardy Court
Augusta, Georgia

## BUSINESS OPPORTUNITIES

**DIAMOND CUTTER & MANUFACTURER want wholesalers or first rate experienced salesman, successfully covering better jewelers and manufacturers to carry goods on memo. All sizes, qualities. Fine make. Rating or highest references required. Address Box 30, American Horologist, P. O. Box 7127, Capitol Hill Station, Denver 6, Colorado.**

## FOR SALE

Complete set of watch repair tools for sale. Also L & R cleaning machine. Going out of business. $400.00. Tools are in perfect condition.

Joseph Holt
206 Devonshire Drive
South Bend 15, Indiana

---

WHY PAY MORE?
Superior Quality watch materials are less at B. & M.
Prove it yourself by taking advantage of our March Issues Offer
Font 60 Font 150 Font 170
3 Micro-Fit Staffs 3 Micro-Fit Stems
2 M-F Yokes Crown Brand Mainspring
Click and Set Spring Plastic Box
Money Back Guarantee
Send $1.49 for each model wanted to:
B. & M. Horological Suppiy
23000 Summerland Ave.
North Olmsted, Ohio

---

WatchMaster timing machine, perfect condition, used very little. Will sacrifice at substantial saving. Write for details.

Vitalis Ruskis
194 Dean Street
Norwood, Mass.

---

FOR SALE
In Palo Alto, California—35 miles south of San Francisco—Second fastest growing community in the U. S.—Fully equipped clock shop—Tools, stock and furnished 2-room apartment joining—All the work you can do.

Fred W. Grimm
Palo Alto Clock Shop
371 Lytoon Avenue
Palo Alto, California

---

L & R Master Watch Cleaning Machine with reversing switch, two baskets, $30.00 F.O.B. Inquire for additional information.

Michael A. Fiorillo
323-D West 9th Ave.
Amarillo, Texas

---

Ten Marshall Systems, more complete than original, plus Marshall Staking tool, with jeweling attachment. Save $150.00 on lot. For details write:

Arthur F. Schaefer
Shepherd, Michigan

---

Antique Grandfather's 8-day clock, mahogany case, gold leaf trim. Date 1750 to 1770—James Gibbs Stirling. Keeps perfect time. Plays 5 Scottish tunes.

Mrs. Cecile Buckingham
1594 N.W. 54th St.
Miami, Florida

# Advertisers Index


A

Acon Watch Crown Co..... 73
American Horologist & Jeweler Book Department 22, 23
American Time Products.... 88
Aristo Import Co., Inc..... 67

B

Bausch & Lomb Optical Co. 5
Bonded Messenger Service 73
Bowman Technical School.. 54
Burt, Edwin B..... 54

C

Clockmakers Guild of America ..... 71

E

Elgin Watchmakers College 27

F

Fulcrum Oil Co..... 63

G

Geneva Dial Co..... 65
Glarden Importing Co..... 61

H

H. v. H. Tool & Instrument Co. ..... 61
Hairspring Vibrating Co..... ..... 71, 73 75
Hamilton Watch Company.. 1
Hammel-Riglander & Co., Inc. .....10, 33, 41
Hoover & Strong, Inc..... 57
Horolovar Company ..... 73

I

Incabloc Corporation ..... 15
International Dial Co., Inc. 2

J

Jacoby-Bender, Inc. ..... ..... 11, 12, 13, 14
Jadow, B., Inc.....6, 29, 43
Joseph Brothers ..... 65

K

K. B. F. Distributing Co..... 73

L

L & R Manufacturing Co..... 25
Lampert, M. J. & Sons, Inc. 17
Larsen Importing Co..... 57
Lowe, B. Company.....71, 73

Mc

McCaw, William S. Co..... 71

M

Mark-Nelson Watch Co..... 75
Marshall, C. & E. Co.....46, 47
Mereminsky, P. ..... 7, 49
Michigan Dial Refinishing Co. ..... 71
Midwest Wholesale Co..... 75
Modern Technical Supply Co. ..... 69

N

Newall Manufacturing Co... .....45, 63, 65, 67, 69
Nye, William F., Inc..... 51

P

Paulson, Henry & Co..... 69
Poltock, John A. & Co...59, 67

R

Reid, Burton M. Sons, Inc... 37
Ressel Watch Co..... 53
Royal Dial & Refinishing Co. ..... 53
Rubin & Co..... 31

S

Schneider, Carl ..... 67
Seitz, Pierre ..... 16
Silbert, M. J. & Co..... 39
Sobel, Henry & Co., Inc..... 3
Standard Unbreakable Watch Crystals, Inc..... 87
Swigart, E. & J. Co..... 18
Swiss Federation of Watch Manufacturers .....8, 9

T

Terwilliger, Charles ..... 69

U

United Tool & Material Co. 73

W

Wakmann Watch Co., Inc... 63

Y

Yelenik Manufacturing Co... 71

Z

Zenith Manufacturing & Chemical Corp. ..... 59


**To: Classified Dept.**

**THE AMERICAN HOROLOGIST & JEWELER**
**P.O. Box 7127, Capitol Hill Sta.**
**Denver 6, Colo.**

**CLASSIFIED AD—$2.50, 25 words, 10c per extra word.**

**POSITION WANTED—$1.00, 25 words, 5c per extra word.**

**Bold face or caps—10c per word.**

**Box No.—50c extra.**

**Payable in advance.**

**Please insert my ad, as follows, in your next issue.**

| | | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Name_____

Address_____

_____

**Check here ☐ if box number is desired.**

... 69
9, 67
... 37
... 53
ng
... 53
... 31
... 67
... 16
... 39
... 3
le
... 87
... 18
ch
8, 9
... 69
o. 73
... 63
... 71
... 59
R
as
rt
r
veler

***YOUR STAR in 1954 is Watch Repair. It can be a big money-maker itself. Besides, it promotes merchandise sales. Reap the greatest profit with the BEST equipment.***

Save time on watch repairs and justify higher prices with better work, scientifically tested. ***That means a WatchMaster***

Get dependable watch records with an instrument that has proven its economical operation and long life. ***That, too, means a WatchMaster***

*More WatchMasters have been sold and are being sold than all other watch-rating machines in the World, combined. There must be a reason. There is.*

## *It's the Best*

FOR GREATEST **VALUE** . . . IT'S THE *Watch Master*

---

**American Time Products, Inc.**
**580 Fifth Ave., New York 36, N. Y.**

**Without obligation, I would like a WatchMaster demonstration at my bench to test watches that I have repaired . . . and to examine its operating advantages and its quality of construction.**

NAME _____

COMPANY _____

ADDRESS _____

CITY, STATE _____